Henry Ford Hospital Medical Bulletin

Vol. 2

CONTENTS

1. Spiritual Strength, Recreation, and Scientific Accomplishment in the Life of a Doctor — 106
   W. Lloyd Kemp, M.D.

2. Glomus Jugularis Tumor: A Report of Four Cases — 112
   J. Lewis Dill, M.D. and Donald Bolstad, M.D.

3. Nodular Goiter and Cancer of the Thyroid — 118
   J. Martin Miller, M.D.

4. Idiopathic Genu Recurvatum as a Cause of Knee Pain Simulating the "Internal Derangement Syndrome" — 122
   John Lyford, III, M.D.

5. Aftermath of Abdominal Exploration
   J. P. Pratt, M.D. — 125

6. Treponema Pallida Immobilization Test—Use and Intrepretation — 130
   Frank R. Menagh, M.D.

7. Comparison of the Causes of Stillbirths and Neonatal Deaths
   Philip J. Howard, M.D. — 134

8. The Certified Chaplain in the Modern Hospital — 139
   Russell L. Dicks

9. Programs of Meetings — 147

10. Abstracts of Recent Publications of the Professional Staff of the Henry Ford Hospital and the Edsel B. Ford Institute for Medical Research — 152

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HENRY FORD HOSPITAL MEDICAL BULLETIN

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SPIRITUAL STRENGTH, RECREATION AND SCIENTIFIC ACCOMPLISHMENT IN THE LIFE OF A DOCTOR

W. Lloyd Kemp, M.D.*

It is for me a great honour to be invited to talk to you on this occasion—a significant event in your career. I feel a sense of pride in and loyalty to this great institution—a pride and loyalty which I hope you will share as the years go by. As I look upon the faces of the senior men on the staff I sense a deep appreciation of their kindly help in leading me out of the wilderness of my early years and giving me orientation. I am, too, grateful for the privileges which this hospital has extended to me: for the professional associations through the years and for the fast friendships which I have been privileged to enjoy.

When I was asked to speak to you, it was suggested that I bring to you some of the thoughts or convictions which may have crystallized during my many years of practice. You will understand, I am sure, if some of my remarks seem personal in nature.

Thirty-two years ago I accepted my appointment as an intern at the Henry Ford Hospital. Judged as a portion of one man's life span that is a fairly long experience. But judged in the light of the centuries which have gone before thirty-two years is a very brief period. Yet during that period, or, shall I say, during the first half of the 20th century, we have witnessed remarkable, even epoch making, advancements; and fantastic are the scientific discovery and progress taking place right now.

For example it was in 1920 that Sir Frederick Banting located in London, Ontario, to engage in private practice. His prospects were anything but bright when after the first month only one patient had consulted him, and the total entry on his books was four dollars. As time went on he continued to observe office hours waiting for the patients who never came. However, he was a man of great persistence and energy and found outlet and occupation by teaching at the University of Western Ontario Medical School. His labors were rewarded amazingly soon for in 1922 insulin had been discovered and was being used in the treatment of diabetes, with the astounding result that countless children, formerly doomed to die, now reach maturity; and for millions there is the prospect of a happy and useful life.

In my own field, typhoid fever is rare; diptheria and whooping cough have been conquered. The mortality in pneumonia has dropped from 30% to a negligible figure. I have had only one surgical mastoid in ten years. We are perhaps at the threshold of discovery of a protective agent against polio-myelitis—to mention only a few. And now we are entering the atomic age in medicine.

Address to the graduating residents and interns, May 25, 1954.

*Visiting Staff, Pediatrician. Formerly of the Staff 1922 to 1926. At present practicing in Birmingham, Mich.

The Henry Ford Hospital has experienced an amazing growth, as you all realize. And I think that aside from its good fortune in an able, intelligent and skillful staff, one important reason was the concept brought into focus that a patient is more than a headache, or a cough, or a broken leg. The patient is evaluated in his entirety, with the particular problem a component of the whole picture. This was in those days a new manner and approach. It still stands as the proper manner of approach to any medical problem.

It has been said, and I am sure you have all heard, that the three I's—Intelligence, Industry, and Integrity are the essential ingredients of a successful career. And that is only too true. But I think there is another component which, for the practicing physician, is also essential. I will call it *Humanity* and define it as a quality of understanding the patient and his environment; of being interested in his problems and showing a sympathy toward his anxieties and fears. It is perhaps this need, so often sensed and not satisfied, that has brought about the psychosomatic concept in medicine. It is perhaps this need, so often sensed and not satisfied, that has brought so much criticism of the medical profession.

What constitutes success in medicine will vary according to the individual's definition. What is the motivation? One will seek it in terms of financial profit, but that is fallacious, for there are many other fields where one can make more money, more easily with less anxiety and perhaps have more fun. Another will turn to medicine because of the position the physican holds in the community — one of esteem, affection, and respect—thanks to the heritage from those gone before. Another will go down the long difficult road of training and continue on that arduous path because of an earnest desire to be helpful to his fellow-man. I think that the soul-satisfaction which comes out of that travailous experience can best be found through the consciousness that you are important, essential, and helpful. Is it pertinent to ask "Is the physician of today as revered as was the case two generations ago?" From time to time we are alerted to the menace of socialized or state-controlled medicine. One cannot think of the government invading the sphere of the church or the priesthood. And isn't medicine a ministry?

You have come to this point in your career where you walk through the portals of the present and face the challenge and thrilling expectancy of what lies ahead. You are debtors to all who have gone before who have prepared the scientific and clinical banquet table at which you can feast. You now have much knowledge and from here out will acquire wisdom. What can I offer that will be helpful to you who are about to engage in the Art of Practice?

I am reminded of the story of Pericles and the Athenian Youth. Pericles was admonishing them for their actions and thinking. Said he—"When I was your age I thought as you do." Whereupon one Athenian youth spoke up and said, "Oh Pericles, would that we had known you when you were in your prime."

Do not permit the making of money your goal. Rather find your satisfaction in the joy of being helpful and useful to others. You have your armamentarium. Bring your skills to the problems which confront you—approaching each case with

thoroughness and sincerity and honesty. Sir William Osler wrote of the magic word "*WORK*." Success in any field is achieved by willingness to work, to work hard and with enthusiasm.

Treat your patient as a human being—not a disease. Remember that a large part of your job in addition to healing is to promote his happiness and well being and to allay his anxieties. We hear much about medical ethics. They are just plain ethics. We hear much about the patient-physician relationship but how seriously do we explore its true meaning? Dr. Frederick Loomis, a distinguished Obstetrician, recently published a booklet entitled "In a Chinese Garden." I quote, therefrom, a letter which I think is apropos.

Peking, China

"Dear Doctor:

Please don't be too surprised in getting a letter from me. I haven't any real right to address you and I am signing only my first name. My surname is the same as yours.

You won't even remember me. Two years ago I was in your hospital under the care of another doctor. I had never heard of you. I lost my baby the day it was born.

That same day my doctor, who was skillful enough *but perhaps not too understanding*, came in to see me, and as he left he said, "Oh, by the way, there is a doctor here with the same name as yours who noticed your name on the board, and asked me about you. He said he would like to come in to see you if you were willing and I would permit him to, because the name is not a common one and you might be a relative. I told him you had lost your baby and I didn't think you would want to see anybody, but it was all right with me."

And then in a little while you came in. You put your hand on my arm and sat down for a moment beside my bed. *You didn't say much of anything but your eyes and your voice were kind and pretty soon I felt better.* I was a very long way from home and had no one of my own. As you sat there I noticed that you looked tired and the lines in your face were very deep. I never saw you again but the nurses told me you were in the hospital practically night and day.

This afternoon I was a guest in a beautiful Chinese home in Peking. The garden was enclosed by a high wall, and on one side, surrounded by twining red and white flowers, was a brass plate about two feet long embedded in the wall. I asked someone to translate the Chinese characters for me. They said:

ENJOY YOURSELF IT IS LATER THAN YOU THINK

I began to think about it for myself. I have not wanted another baby because I am still grieving for the one I lost, but I decided that moment that I should not wait any longer. Perhaps it may be later than I think, too. And then, because I was thinking of my baby, I thought of you and the tired lines in your face, *and*

the moment of sympathy you gave me when I so needed it. I don't know how old you are but I am quite sure you are old enough to be my father; *and I know that those few minutes you spent with me meant little or nothing to you, of course—but they meant a great deal to a woman who was desperately unhappy and alone.*

So I am presumptuous as to think that in turn I can do something for you, too. Perhaps for you it is later than you think. Please forgive me, but when your work is over, on the . ' you get my letter, please sit down very quietly, all by yourself, and think about it.

Marguerite"

Does this not suggest a fine patient-physician relationship?

You may not realize it but there is only one foundation on which to build a successful practice and that is satisfied patients. Don't brush your patients off. Set as your task a job well done. It is not how many patients you see in a day that matters, but rather, how well you handle those you do see. Otherwise your chickens will come home to roost.

Be forthright and honest in your relationships. Treat the patient as you would be treated if you were the patient. Or putting it another way, don't do anything to him that you would not want done to you.

Find time for spiritual exercise—no one needs spiritual strength as does the physician.

Develop an avocation to which you may turn for your hours of leisure. Find interest in worthwhile institutions and projects and make your contribution as a citizen. These will also enrich your life, find you worthwhile friendships and enhance your value and effectiveness and dignity as a physician.

Be available and always carry your responsibility faithfully. An incident which occurred several years ago will illustrate. I received a call one early morning from a mother who was concerned because of the peculiar behavior of her ten-year-old son. She gave a very vague story although she was an intelligent and a responsible mother. From the paucity of symptoms which she presented I could draw no conclusion. But something told me I should go and survey the situation myself. Now I do not enjoy getting up at 2 a.m. any more than you do.

When I arrived at the home I was met by the father who staggered down the hall as if intoxicated. He directed me upstairs where I was shocked to find the mother with whom I had talked just fifteen minutes before face down on the floor at the entrance of her son's bedroom—unconscious. A hurried look revealed that the son, too, was unconscious. It was quite obvious that these people were overcome by gas poisoning. I went immediately to an adjoining bedroom to call the fire department and while dialing the telephone the twelve-year-old daughter staggered out of the bathroom and fell before me unconscious. The entire family was rushed to the hospital by ambulance and all recovered.

Not until I sat at breakfast some hours later did the full force of that dramatic situation come upon me. I then realized that, but for the Grace of God, a stark tragedy would have unfolded that night. How happy I was that I had listened to the still small voice!

If you follow these simple rules than the financial rewards will come but more important are the valid compensations which reward your efforts and make them worthwhile.

There is nothing in the Hippocratic oath which says you should not give time to your family; that you should labor endlessly without recreation; that you are not entitled to adequate compensation for your labors, and security in the sunset years, and an abundant life.

In the year, 1875, there was born in Upper Alsace to a simple parish pastor, school teacher and organist, a son destined to become the greatest living man of our time. By the end of his twenties he had earned and acquired academic degrees of Doctor of Music, Philosophy, and Theology—and was at that moment, distinguished as a concert organist and organ craftsman, the greatest authority on Bach and his music, theologian and preacher, philosopher, and scientist—to mention only a few. But he had yet not found that inward happiness for which he was searching. And so he entered medical school because, as he puts it, he wanted to give direct service to humanity.

Upon completion of his training, Albert Schweitzer renounced the gracious living which he might have found in Europe to go to Africa as a medical missionary and find the life abundant. He made his first visit to this country a few years ago at which time an honorary degree was conferred by the University of Chicago. An incident which occurred there indicates the humility and majestic simplicity of the man. The story was related to me by a friend, the organist and carillonneur of the university, who was privileged to spend many hours with him. Schweitzer was gathered with the Chancellor and faculty and dignitaries of the city receiving his instructions and listening to rehearsal of the details attendant upon the ceremony of the morrow. He was obviously indifferent and weary of the situation and finally said, "Gentlemen, you forgive me my mistakes and I will forgive you yours." Whereupon he turned and walked away from the group toward the console of the great organ, and asked, "If you please, will you permit me to play the organ for ten minutes." The pomp and circumstance were no match for the hunger in his soul—for he had no organ in the wilds of Africa.

Albert Schweitzer is not great because he is a musician; he is not great because he is a missionary or a minister; he is not great because he is a doctor; he is great because "he has gone about doing good"—he has great love for human beings and is humble in his service to them. He has great reverence for life. With Einstein he believes that the mysterious is the fairest expression of life—the cradle of all true science and art.

We cannot all be Albert Schweitzer's but we all can have a spark of him in us and reap great rewards in the practice of the greatest profession on earth. What I have tried to say to you this morning is well expressed in the words of this poem by Kenyon Cox:

"Work thou for pleasure,
Paint or sing or carve
The thing thou lovest,
Tho' the body starve.

"Who works for glory
Misses oft the goal.
Who works for money
Coins his very soul.

"Work for the works' sake
Then, and it may be,
That all these things shall
Be added unto thee."

I envy you—your youth, your opportunities, your ambitions and satisfactions and wish you good fortune and great success—every one of you!

GLOMUS JUGULARIS TUMORS: A REPORT OF FOUR CASES

J. L. Dill, M.D.* and
D. S. Bolstad, M.D.**

Four patients have been seen and treated because of tumors of the middle ear arising from the glomus jugularis. Two of these tumors were far advanced when first seen; the other two were of comparatively recent origin.

Case I. 524432 I.B. Female, white, aged 23.

11-15-47

At the time of the first visit her chief complaint was of "trouble with the right ear for the past five years." She stated that about five years prior to her initial visit she developed trouble with the right ear which was mainly a "plugged-up" feeling, and was associated with pregnancy. At times she noted a discharge from the right ear which resembled liquid wax. For the previous two years she noted pain around the right mastoid region and generally did not feel well. There had been a cough for three weeks and a loss of 14 lb in weight. Hearing had become poor in the right ear.

General physical examination was negative. The right ear canal was clean. The drum was red and swollen in the posterior quadrant, and there was a heaped-up area on the floor of the canal close to the drum. There was definite mastoid tenderness. X-rays of the mastoids were negative for destruction. The patient was placed on sulfadiazine.

11-19-47

Patient reported she had less discomfort in the ear. On examination it appeared that there was less redness of the ear drum.

1-27-49

She did not return for approximately fourteen months. At that time she complained of inability to swallow which had been present for three days and swelling and thickening of the tongue for one week. The right ear drum was red. The tongue was atrophied on the right side with a deviation to the right on protrusion. There was sagging of the soft palate on the right. There was also tenderness of the right mastoid. On X-ray the mastoid cell outline was not clear. There was haziness and an area of destruction inferior to the canal. The petrous apices were well shown and nothing unusual was noted. The hearing test showed a conductive deafness of the right ear. Spinal fluid was negative.

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2-23-49

A right radical mastoidectomy was done. The cortex was intact; the cell walls were intact, but the bone was soft. As the cells were opened a serous discharge pulsated from the deeper cells. There was a tumor of the middle ear found with a dihisence of the floor. There was profuse bleeding. Pathological diagnosis was glomus jugularis tumor.

3-3-39

X-rays showed a large defect in the region of the right jugular foramen with smooth margins and comparative denseness. It was suggestive of a slowly expanding, non-invasive lesion.

5-21-49

The mastoid was reopened, at which time the mastoid tip, the posterior canal wall, and the floor of the middle ear were removed. The facial nerve was exposed and pushed aside and some tissue was removed. Because of the very profuse bleeding the tumor could not be removed. During the operation the carotid was pinched off, as was the internal jugular, by finger pressure but we were unable to control the bleeding of the tumor.

Pathological report read "Between the bony trabeculae there is fibrous tissue for the most part infiltrated with tumor. Some pressure necrosis of bone. The pattern of the growth of the tumor in the bone indicates an infiltrative capacity. Bone destruction apparently not entirely expansible."

The patient had a marked facial paralysis. There was good faradic response and though there never was complete recovery there was gradual improvement of the paralysis. There was likewise a left sided body paralysis, due to possible thrombosis of the postero-inferior cerebellar artery, from which she made a slow recovery.

8-5-49

X-ray therapy was begun. She received this daily until 10-14-49.

11-12-49

There was still some residual paralysis of the left side of the body.

2-16-52

Patient did not return to the hospital until this date. There was a continuing facial weakness, difficulty in swallowing, regurgitation of food and it was felt that generally her progress was poor.

5-9-52

Ventriculogram was normal.

3-12-54

There was another lapse between visits. When patient returned she had some increase in pain in the right arm and increase in dysphagia. X-rays showed some

increase in the destruction of the mastoid and adjacent bones. A course of X-ray in small fractional doses was begun.

6-1-54

Patient was admitted to the hospital because of "smothering attacks" and shortness of breath. Physical examination and laboratory tests were all within normal limits. Patient was discharged feeling fairly well.

COMMENT:

This woman is our youngest patient, with onset of symptoms at the age of 18 years. She is still living with tumor involvement of the right ear for over twelve years. She has difficulty in swallowing and there is evidence of involvement of the VII, VIII, IX, X and XII cranial nerves.

Case II. 673952 E.K. Female, negro, aged 65.

3-22-52

This patient first consulted us with the chief complaint of "nose bleeds." She was admitted on the medical service at that time because of severe epistaxis. Her past history revealed that since 1926 she had had trouble with her left ear. There was a "buzzing and bubbling" noise at the onset, and she put objects into the ear in order to stop the noise. She developed pain in the left ear and her local physician incised the drum. This was followed by considerable bleeding. The ear continued to drain and "a lump" was noted in the left ear canal. In 1945 she developed a paralysis of the left side of the face.

At the time of her examination on 3-22-52 leucocyte count was 15,800 with 83% polynuclear cells. The left auditory canal was filled with a tumor which was covered with skin. There was a soft fluctuant swelling over the left mastoid, zygoma and parotid areas. A whiteish, purulent material came from the canal behind the tumor mass. X-rays showed the right mastoid to be pneumatized and normal. There were sclerotic changes in the left mastoid and some decrease in the diameter of the left auditory canal.

4-1-52

A radical mastoidectomy was done. The mastoid cortex was intact. It bled profusely. The tumor had invaded the entire mastoid cavity. The posterior canal wall was destroyed and the middle ear and canal were filled with the tumor. There was partial destruction of the anterior canal wall, and invasion of the neck and parotid area by the tumor mass. Protrusion of the tumor was noted in the nasopharynx through the orifice of the eustachian tube.

4-6-52

X-rays of the petrous revealed demineralization and bony defect along the medial portion of the petrous bone on the left with involvement of the floor of the medial and posterior fossa and extension into the mastoid region.

4-7-52

Her postoperative course having been uneventful she was discharged from the hospital. X-ray therapy was advised, but patient refused further treatment of any sort and did not return to the hospital.

COMMENT:

In this case the symptoms of left middle ear involvement were present for twenty-six years. In this time there was invasion of the mastoid, parotid gland, petrous portion of the temporal bone and destruction and apparent involvement of the floor of the medial and posterior cranial fossa.

We have been unable to contact this patient for any additional follow-up.

Case III. 680217 E.K. Female, white, aged 43.

5-28-52

This patient's initial complaint was headache. She was admitted to the hospital on the Neurosurgery service with a tentative diagnosis of brain tumor. She was rather vague about the onset of the headache, and was only able to date it to some six to eleven weeks previously. There was no antecedent history other than an attack of dizziness.

5-31-52

The left ear drum was found to be discolored. There was no perforation noted, but there was a peculiar fullness in the upper and posterior portion. The tongue was atrophied and there was deviation to the left on protrusion. Audiometric examination revealed a marked deafness of the left ear. Neurological examination showed a mild papilledema bilaterally; there was paralysis of the left side of the tongue and mild left facial weakness as well. X-rays revealed extensive lytic lesion of the left petrous. A diagnosis of glomus jugularis tumor was made.

6-2-52

At the time of operation by the neurosurgeons a reddish gelatinous tumor in the left suboccipital region was found which bled profusely. Pathological report confirmed the diagnosis of glomus tumor.

1-9-53

Patient expired after a gradual down-hill course. There was evidence of intracranial extension. Post-mortem was denied.

COMMENT:

The history is short in this case, with symptoms of less than a year and death due to an intracranial extension of the tumor.

Case IV. 24592 P.G. Female, white, aged 55.

11-5-48

When first seen by us in the clinic her principal complaint was of tinnitus. Examination at that time was entirely negative and her hearing was normal.

9-7-49

On her return to the clinic she complained of a "thumping sensation in the left ear." This was more or less synchronous with her heart beat. In addition there was an occasional mild pain and a "plugged up" feeling in the left ear.

Examination revealed the left ear canal to be clean; ear drum was intact. There was redness of the inferior quadrant of the drum, giving the impression of something being present behind it. There was no edema of the eustachian tube or orifice. Tapping of the mastoid produced a hollow sound on the left which was entirely different from that produced on the right. The X-rays were negative. White blood count was 7,650.

5-2-51

She was seen again, complaining that the tinnitus still persisted and that she had noted more fullness of the left ear. The audiometric examination at that time revealed slight diminution in hearing bilaterally. X-rays of mastoid were again negative.

5-19-52

After admission to the hospital a simple mastoidectomy was done. No infection was found to be present; the cell walls were intact. Pathological diagnosis was glomus jugularis tumor.

6-4-52

X-ray therapy was begun. She received this daily until 6-18-52.

8-6-52

The thumping sensation in the left ear was less marked, disappearing at times. There was no essential change in the left ear on examination.

1-14-53

Audiogram revealed the hearing to be unchanged.

10-8-53

The patient stated the tinnitus was mild. There was a slight hissing sound at times in the ear which she found troublesome.

Examination revealed slight redness of the left drum in the inferior quadrant, due to a small reddish mass behind the drum. The hearing remained about the same.

COMMENT:

In this case X-ray therapy was advised rather than surgery in the hope that the tumor could be controlled. It is our expectation that the patient can outlive the tumor, with perhaps no increase in her symptoms which she at present tolerates reasonably well.

CONCLUSION:

In summary, we find all four of these patients were female, the age at the onset of symptoms ranging from 18 to 55 years. In common the symptoms were vague at the onset; there was tinnitus, what was described as a "plugged up" feeling, and mild pain in the ear. Because of the mass behind the ear drum it had the appearance of a mild inflammation.

The glomus jugularis tumors are apparently benign, spread by direct continuity with destruction of bone and involvement of the surrounding structures, including the central nervous system. They are slow-growing, produce a conductive deafness, and by destruction involve the nerves in the surrounding area. This latter in turn may produce the symptoms of a jugular foramen syndrome.

In the early stages of the disease, X-rays fail to show any destruction or involvement of the ear or mastoid. As the tumor progresses there is a distinct haziness of the mastoid cells. Still later destruction in the middle ear and in the adjacent mastoid cells is evident. The growth at times may involve the petrous with evidence of destruction in this area on X-ray.

It would appear that early in the disease surgery is the treatment of choice. If confined to the middle ear the tumor may be entirely removed. Bleeding at the time of surgery is profuse and difficult to control. Occasionally the patient may require a transfusion. It should be noted that profuse bleeding, either on paracentesis of the drum or at the time of operation, should be considered one of the diagnostic features of glomus jugularis tumor. With surgery the facial nerve may be paralyzed.

If the growth is extensive it cannot be removed in its entirety by surgery. In this event X-ray therapy is perhaps the best choice of treatment. Such therapy may shrink the tumor and may lesson the bleeding. In two of our cases it apparently prevented rapid extension of the growth.

Prognosis in all cases may be guarded. It is extremely doubtful that the entire growth can be removed. Life may be prolonged, however, by either surgery or roentgen therapy.

NODULAR GOITER AND THYROID CANCER

J. Martin Miller, M.D.*

During the period 1943 to 1952, 435 operations were performed at Henry Ford Hospital for non-toxic nodular goiter. During 1953 there were 180 such operations, more than twice as many as the previous high of 89 in 1952, and more than 3 times the number of the second highest year of 1948. This amazing increase is far out of proportion to the increase in registrations, goiter referrals, or the national income. It may well reflect the emphasis placed on the removal of thyroid nodules by various authors in the past 5 years. The incidence of thyroid carcinoma in nodular goiter has been reported to be between 5 and 25% depending on the degree of nodularity of the gland, and the inclusion of obvious thyroid cancers in the statistics[1, 2, 3, 4, 5]. Through a process of refinement, several authors have reported series based on the incidence of carcinoma in non-toxic nodular thyroids in which malignancy is a surgical and/or a pathological diagnosis.[6, 7] This has produced a more realistic figure of 3-5%, but commonly this is assumed to represent the incidence of cancer in the glands which were not operated upon. By using the lowest figures for thyroid nodules in the general population, and the above assumption, Sokal[8] and Crile[9] have theoretically established thyroid cancer as a disease of almost epidemic proportion. As statistics can be interpreted in numerous ways, and the incidence of nodular goiter is quite variable in different parts of the country, only an analysis of our own experience is entirely applicable to our practice. It is of general value in that the majority of our patients are self-referred and the picture of a disease as we see it is much more that seen by the average practitioner than is that seen and reported by some of the larger specialty clinics.

NODULAR GOITER

The picture of nodular goiter at autopsy in the Great Lakes area has been adequately presented by Hazard[10] who reports that 42% of all thyroids removed at autopsy are nodular. This is less desirable than a figure based on physical examination for obvious reasons. This condition is seldom indexed in our out-patient department and this, plus the variability of the experience of the initial examiner, makes the perusal of the history unsuitable for determining the incidence of nodular goiter. Accordingly, 300 unselected non-obstetric in-patient women over 20 years of age and 300 medical clinic women patients over 20 were examined by one observer. Positive findings were checked by independent observers. Patients whose presenting complaints were related to the thyroid or who had had a previous thyroidectomy were excluded. In this combined group there was an incidence of nodules of 2 cm. or over of 4.5%. An additional 7% had nodules of 1-2 cm. The former will be the only group subsequently referred to, principally because nodules of this size are readily identified on physical examination, and in the past, the general surgeons have indicated a willingness to remove nodules of this type. (It is, of course, well

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known that primary carcinomas are often one centimeter in size.) 1% of the patients had what seemed to be solitary nodules of 2 cm. or larger. Using appropriate conversion figures,[11] the incidence of 2 cm. nodular goiters in our patient population should be about 3%, and as there were 300,000 non-pediatric and non-obstetric new patient registrations during the 10-year period, there would have been approximately 9,000 nodular thyroids of this type.

UNSUSPECTED CANCER OF THE THYROID

In the 435 thyroidectomies for non-toxic nodular goiter from 1943 to 1952, carcinoma was a clinically and sometimes surgically unsuspected finding in 16 or 3.7%. All patients in whom a positive preoperative diagnosis of cancer was made, or who presented themselves with metastatic disease, or who were operated because of toxic symptoms, were omitted from consideration. The percentage of maglignancy in those glands thought to have solitary nodules was practically identical to that of those thought to contain multiple nodules. Four of the seven multinodular glands, however, had no more than two nodules felt or the disease was confined to one lobe. Our clinical estimation of the degree of nodularity was 60% accurate. That this series had undergone a great deal of selection, is evidenced by the fact that almost half of the patients were sufficiently concerned by the mass in the neck that they were first seen in the General Surgical Clinic and were referred directly to the hospital for a preoperative workup.

TOXIC NODULAR GOITER

Most authors emphasize the low incidence of carcinoma in toxic nodular goiter and eliminate such cases in determining the incidence of unsuspected thyroid cancer. This point of view has been challenged by Sokal,[12] who arrives at the conclusion that cancer is more frequent in the toxic gland. If we ignore the theoretical aspect of the effect of toxicity on the development of malignancy, and on the probable degree of differentiation of possibly one of the nodules, then the incidence of cancer in these glands should be about the same as that in unselected nodular goiter. These goiters have been largely 100% removed and the size, rate of growth, or obstructive symptoms did not primarily bring the patient to the physician. We had one case of unsuspected cancer in about 250 cases of toxic nodular goiter.

CANCER OF THE THYROID

During the 10 years being studied, there were tissue diagnoses made on 32 cases of thyroid cancer. The pathologic diagnoses were 56% papillary, 10% malignant adenomas, 31% adenocarcinomas, and 3% other. These represented 0.7% of all the cancers seen during the same period. They fell into 3 groups. The first, that consisting of 7 cases in whom a preoperative diagnosis of cancer was made. All were dead of the disease within 2 years. The second, that consisting of 8 cases who presented with metastatic cervical nodes. None were dead of the disease or known to have recurrences in 1953. The third, that consisting of 17 cases whose cancers were found unexpectedly. All of these were living and free of recurrences in 1953.

An attempt was made to assay the importance of thyroid cancer as a cause of death by comparing it with other more common types of cancer during the same period. All deaths of people known to have died of their disease in the 10-year period were counted regardlesss of when the tissue diagnosis was made. These are compared to the new diagnoses made during the same period in Table I. Non-papillary cancer of the thyroid resembled cancer of the breast, rectum, and cervix in its behavior while the papillary cancers did not.

DISCUSSION

If we assume that most of the thyroid cancers in our patient population came to surgery during 1943 to 1952, then the incidence of thyroid cancer in nodular goiter in our practice would be 0.2%. This corresponds to the identical figure calculated by Sokal[12] from nation-wide statistics. It also approximates the incidence of cancer in toxic nodular goiter in this hospital. We do not, however, have a significant number of cases with these combined diseases for this figure to be accurate.

The cancer removed unexpectedly is apt to be curable. Unlike some other types of cancer, this thyroid cancer is apt to also be of low malignancy and curable at a later date. Our follow-up on the papillary cancers with node metastases is admittedly short, but others have indicated that a 10-year survival after adequate surgery carries an excellent prognosis[13], [14]. It is significant that of the six unsuspected cancers found in 1953, all were papillary, and this represented 3 times the number of people known to have died from this disease in the 37-year history of this institution. Prophylactic removal of nodular goiter is a controversial subject, but probably not more than 20 per cent of the very malignant tumors occur in old goiters,[14] and a 100% thyroidectomy is required for adequate prophylaxis. The lifetime risk of a nodular goiter is estimated under 1%,[12] making this a doubtful surgical indication.

TABLE I

Type of Cancer	Number of Pathologic Diagnoses, 1943-52	Number Known Dead of the Disease, 1943-52	Ratio of Cases Diagnosed to Deaths
Thyroid, papillary	18	2	9:1
Thyroid, non papillary	16	6	2.3:1
Thyroid, total	32	8	4:1
Stomach	308	237	1.3:1
Breast	448	224	2:1
Cervix	246	143	2:1
Rectum	349	170	2:1

SUMMARY

The incidence of nonclinical carcinoma of the thyroid in nodular goiter in our practice is probably about 0.2%. Surgical removal for pathologic diagnosis of all thyroid nodules would seem to be a procedure of a limited usefulness in attempting to improve our cures of this disease. The method of obtaining the 20 fold concentration of this disease in surgical material is worthy of further study. The degree of nodularity of the gland is often clinically indeterminable and is probably not an accurate guide to the possibility of malignancy.

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IDIOPATHIC GENU RECURVATUM AS A CAUSE OF KNEE PAIN SIMULATING THE "INTERNAL DERANGEMENT SYNDROME"

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The various local mechanical causes of pain in the knees have been the subject of much attention and many published articles. The "internal-derangement-of-the-knee" syndrome has become an accepted clinical entity manifested by pain in the knee joint—medial or lateral—on weight bearing against flexion or rotation resistance with or without episodes of "locking" of the affected joint, occasionally associated with increased fluid in the joint, usually associated with a history of injury, and a sensation by the patient that the knee "gives away." The most frequent causes of this condition are tears of the menisci, tears of the collateral or cruciate ligaments, cartilaginous loose bodies (osteochondritis dessicans), or hypertrophy of the fat pads.

There have been observed, during the past six years, a series of patients with symptoms simulating those described above; but without any history of injury, and with minimal findings on examination except for a non-specific genu recurvatum, the correction of which by simple mechanical means has resulted in relief of the knee symptoms.

Fifteen such cases have been observed and treated during the past six years. Six of these cases were seen in another center; and only the nine cases seen at Henry Ford Hospital are described in this report. These cases are presented as examples of another local mechanical cause of pain in the knees representing "pseudo-internal-derangement-of-the-knee" syndrome which responds to simple mechanical measures. The details of the symptoms and findings on physical and x-ray examination in this group of cases are presented in Table I. These data indicate certain facts. All but one patient were males. The age of the patients ranged from 16 years to 44 years, with an even "spread" in the age levels. All patients were white; but this probably represents a "sampling error" rather than a racial tendency. Only one patient gave any history of trauma, and that was minimal. The duration of symptoms was from 6 months to 5 years. None of the patients ever experienced any "locking" of the involved knee. Roentgenograms in all cases revealed no abnormalities in the involved knee joints, except in one case in which there was noted slight changes in the patellae compatible with chondromalacia patellae. This was the same case mentioned previously as being the only one in which there was a history of even minimal trauma. In all but two cases the knee symptoms were bilateral. The symptoms in these cases were similar—aching anteriorly about the knees, or in the knees and calves; and in one instance a feeling of instability as well as pain in the knees. In each instance physical examination revealed no relaxation of the collateral or cruciate ligaments; and no swelling or increased free fluid in the involved joints. Only

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TABLE I

Details of history, x-ray findings, and examinations in cases of "pseudo-internal-derangement-of-the-knee"

CASE	AGE	SEX	RACE	TRAUMA	SYMPTOMS				EXAMINATION							FOLLOW-UP TIME	SYMPTOM FREE	TREATMENT
					DURATION	LOCKING	PAIN	BILATER'L	GENU RECURVATUM L.	GENU RECURVATUM R.	TENDERNESS	LIG. RELAXED	FLUID OR SWELLING	CREPITATION	X-RAY			
1	16	M	W	0	1½ yrs.	0	Aching Anteriorly	+	10° +	10° +	0	0	0		Neg.	1 month—seen in E.N.T. Clinic after 2 yrs. and had no symptoms	+	¼ inch elevation heels
2	40	M	W	0	1 yr.	0	Aching Anteriorly	+	+	+	Lateral	0	0	0	Neg.	1 month	Rt. 0 Lt. +	¼ inch elevation heels
3	46	M	W	0	5 yrs.	0	Aching calves & knees	+	+	+	0	0	0	0	Neg.	1 month—seen in Surg. & C.R. & legs O.K. 23 months	+	$\frac{3}{16}$ inch elevation heels
4	35	M	W	0	½ yr.	0	Aching Anteriorly	+	10° +	10° +	0	0	0	0	Neg.	9 months—House M.D.	+	¼ inch elevation heels
5	44	M	W	0	1 yr.	0	Aching knees & calves	+	10° +	10° +	0	0	0	0	Neg.	1½ months—grocer—on feet 13 hrs. daily	+	¼ inch elevation heels
6	30	M	W	0	½ yr.	0	Aching—left knee	0	+	0	0	0	0	+	Neg.	1 month	+	¼ inch elevation heels
7	25	F	W	0	5 yrs.	0	Bilateral Knee pain on weight bearing	+	+	+	0	0	0	++	Neg.	7 months	+	Cuban heels for increased elevation
8	26	M	W	+ Jarred at work—stepped down	10 mos.	0	Pain in knees on running and walking	0	0	+	+	+	0	0	+ Minimal chondromalacia patellae	1 month—patient compensation—not returned returned by employer—no symptoms	+	¼ inch elevation heels
9	17	M	W	0	2 yrs.	0	Pain—"knees give way"—afraid to run	+	+	+	0	0	0	0	Neg.	Seen in E.N.T. Clinic after 2 yrs.—knees asymptomatic	+	¼ inch elevation heels

three cases had any crepitation on motion; and only two had any tenderness. The involved knee in all cases had 10 degrees or more genu recurvatum.

Treatment in all these cases consisted only in correcting the genu recurvatum by elevating the heel on the affected side. The time of follow-up was from one month to two years; and by last report all patients remained asymptomatic while carrying on their usual activities. It is felt that the symptoms probably arise from low-grade, chronic strain of the knees resulting from the mild genu recurvatum. It is possible that this sympton-complex was not seen in women (only one case in fifteen) because the high heels in prevalent use on women's shoes function to prevent such chronic strain in women with mild genu recurvatum in the same manner as did the elevations of the heels in the present cases.

SUMMARY

There has been presented a group of patients with knee-joint symptoms simulating the "internal derangement syndrome"; but in whom the usual history of trauma, instability and/or "locking" of the involved knee were absent; and findings on examination, except for mild genu recurvatum, were minimal. These patients all became asymptomatic with simple mechanical correction of the genu recurvatum. It is believed that these cases of "pseudo-internal-derangement-of-the-knee" are important as representing another example of a local mechanical cause of pain in the knees which responds to conservative, non-surgical measures.

AFTERMATH OF ABDOMINAL EXPLORATION

J. P. Pratt, M.D.*

The indications for abdominal exploration have changed greatly over the years and the purpose for which the operation is used continues to change. Exploratory laparotomy, without any further designation, at one time appeared frequently on operative schedules. If a diagnosis was difficult, an exploration offered an easy way out. Improvements in techniques and addition of new methods, particularly in the field of radiology, have increased the percentage of correct pre-operative diagnosis and proportionately diminished the need of exploration for the purpose of diagnosis. Consequently, the liberal use of exploratory laparotomy has been gradually restricted. A plausible reason for each operation performed may be had by an earnest attempt to make at least a provisional pre-operative diagnosis.

The pendulum swung too far towards no exploration. Today the practice is far too prevalent to open an abdomen for one specific purpose such as to remove a gallbladder, or an ovary, without regard to the other viscera. In spite of a thorough clinical investigation, some intra-abdominal anomalies and lesions are without signs or symptoms. These otherwise obscure lesions may be found if exploration is adopted as an auxiliary procedure to an abdominal operation. The importance of the discovery of these silent lesions varies from the detection of an early cancer to the slight displacement of an organ. Some of the findings are vital to the patient while others have only a casual interest.

It has always seemed to me that to serve the best interest of the patient the whole abdomen should be explored whenever feasible at the time of laparotomy. This practice I have always followed. In order to determine the value of this procedure my operative records were reviewed for a ten year period 1941-1951 inclusive. The findings were reported at the Academy of Obstetrics and Gynecology in 1952 and published later (1). That report included the contraindications to exploration such as the presence of infection. Also a systematic method of exploration was emphasized.

The total number explored during the ten years was 1142. Among that number some complication was found in 530 or 46.4 per cent. Some of the lesions were diagnosed before operation and the exploration was merely confirmatory. Other lesions might have been diagnosed pre-operatively. Many of the lesions gave no evidence at all of their existence before their accidental discovery.

The report (1) stated that "The gallbladder was found to be more frequently involved than any of the other viscera. The most common lesion was chronic cholecystitis. The criteria for making the diagnosis were thickening of the wall of the gallbladder, adhesions, and enlargement of the lymphatic glands along the bile tract. If two of these changes were present the diagnosis was considered positive. In this manner cholecystitis was diagnosed in 172 patients or 15 per cent of all those explored. Gallstones were palpated in 115 patients or 10 per

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cent. Adhesions not included in the cholecystitis group were found in 48 or 4 per cent."

"No attempt was made to classify the gallbladder according to size although some were small and contracted about a stone, while others might be considered hydropic. Since the filling and emptying of the gallbladder is influenced by the ingestion of food, pre-operative medication, and anesthesia, any statement regarding the size of the organ would have little value unless all of these factors were considered."

"Adhesions to the gallbladder must be distinguished from a mesentery that extends to the tip of the organ. The distinction is not always easy by palpation alone. Doubtful cases were assumed to be a mesentery. At times the adhesions were so extensive that the exact relation to the gallbladder could not be determined."

"Inability to palpate stones is not proof that they are not present. One patient was reported to have a normal gallbladder but shortly after her operation she developed gallstone colic and the gastroenterologists demonstrated stones."

In order to test the significance of the operative findings, the hospital records of the patients who were operated upon in 1942 were recently reviewed. The year 1942 was selected because it was the first of the ten-year survey and therefore gave ample time for a follow-up. Among the 61 patients explored 15 had gallstones, 7 had chronic cholecystitis not associated with stones and 12 had adhesions. The figures indicate that more than one half of the patients explored were found to have some complication of the gallbladder. The relevant material of the individual patients follows:—

Mrs. E. P. was age 42. Eight years previously she had experienced gastrointestinal distress and a diagnosis of gallstones was made. In 1941 an operation for ovarian cyst was performed. When the abdomen was explored gallstones were found in the gallbladder and cystic duct. In 1942 hysterectomy was done and the gallbladder removed at the same operation. After convalescence she was not seen again at the hospital.

Mrs. V. G. was age 49. She was referred by her family physician for the removal of an ovarian cyst. At the time of her pelvic operation, 1942, exploration showed gallstones and a chronic cholecystitis. She also had pruritis and leukoplakia of the vulva for which she was operated upon in 1945. She was hospitalized in 1952 with the diagnosis on discharge of arteriosclerosis, angina pectoris, bundle block, myocardial infarction and cholecystitis with gallstones. In the interim between hospital visits she had some indigestion but no definite gallbladder attacks. She was told about the gallstones after the first operation and advised to arrange to have them removed. She chose to wait until some definite symptoms from the stones developed. In retrospect it is difficult to determine how much the stones contributed to her other illness, but apparently it was not clear whether the upper abdominal symptoms were all cardiac or partly from the gallbladder.

Mrs. F. W. was age 44. At the time of a pelvic operation in 1942 the gallbladder was distended and a single large round stone was palpated. Cholecystectomy was advised, but was refused. She was not seen at our hospital after her convalescence. She died of cancer of the breast at another hospital.

Mrs. A. B. was age 70. The original complaint of this woman was backache which she thought was due to her pelvic organs. She did have a slight descensus but the most important feature of her examination was the presence of gallstones with a story of recent colic. A cholecystectomy was performed in 1942. Exploration of the pelvis confirmed the diagnosis of descensus and no other pelvic lesions. Palliative measures were used for her descensus and her symptoms were partly relieved. Arteriosclerosis, hypertension and nehpritis have incapacitated the patient for several years. She is now 83 years old and quite feeble. No further gastrointestinal symptoms have been noted since her cholecystectomy.

Mrs. A. G. F. was age 54. A cervical polyp was removed in 1941. At that admission her gastrointestinal symptoms were investigated and a diagnosis of gallstones and amebiasis was made. The gallbladder was removed in 1942. A vaginal hysterectomy was performed in 1953 for prolapse. No gastrointestinal symptoms were recalled by her after her cholecystectomy.

Mrs. E. H. W. was age 44. The presence of gallstones was known for 10 years. Cholecystectomy was done at the same time as hysterectomy. Her convalescence was satisfactory. There is no further record of her after her immediate recovery.

Mrs. S. P. was age 37. Exploration at the time of hysterectomy in 1942 revealed gallstones in the gallbladder. She had gastrointestinal symptoms until her gallbladder was removed in 1943. During the next 10 years the patient was seen at frequent intervals for functional nervous disturbance with vague gastrointestinal symptoms.

Mrs. V. L. was age 38. Cholecystitis and cholelithiasis were diagnosed in 1941. Pregnancy began in February 1942. During the fourth month of her pregnancy her gallbladder was removed on account of an exacerbation of her symptoms. Exploration confirmed the diagnosis of a 4 months pregnancy. Her pregnancy proceeded to a normal termination. In 1948 and 1949 she had recurrences of pain in the gallbladder region over a period of 6 months. There have been no further abdominal symptoms since then.

Mrs. S. P. was age 42. Exploration at the time of hysterectomy in 1942 revealed gallstones in the gallbladder and calcified glands along the bile tract. Her convalescence was stormy but there was no indication of gallbladder complication at that time. A virus pneumonia prolonged her recovery. After her discharge from the hospital in 1942 she was reported by her family to be in good health, though she was not seen by us again. A request came to send her record to another hospital in 1953. Her physicians reported that she was acutely ill with high fever and pain characteristic of gallstone colic. After several days of observation the gallbladder was removed. It contained stones and free pus. Pancreatitis was suspected but not demonstrated. Her postoperative convalescence was satisfactory and she has been reported to be well ever since her operation.

Mrs. B. H. was age 52. Exploration at the time of hysterectomy in 1942 revealed gallstones in the gallbladder. Hypertension was present. No previous history of gallbladder disturbance could be obtained. She was advised to have the gallbladder removed but she did not return to our hospital again. In 1950 she was admitted to another hospital with a diagnosis of acute pancreatitis. After preliminary treatment she was able to have a cholecystectomy. At that operation

the pancreas appeared normal. For the last 3 years she has been in and out of cardiac failure.

Mrs. J. M. F. was age 21. An out of town patient came because of gastrointestinal disturbances. She was 4 months pregnant. X-ray showed gallstones. They were removed. Exploration at the time of cholecystectomy confirmed the diagnosis of 4 months pregnancy. There has been no further report from her family physician.

Mrs. E. E. was age 62. Exploration at the time of resection of the rectosigmoid for carcimoma revealed the presence of gallstones. This patient has returned for follow-up almost every year up to the present time. There has been no evidence of return of the cancer and she has not had gallbladder disturbance.

Mrs. L. M. was age 40. Gallstones and fibroids were diagnosed before operation. The uterus and the gallbladder were removed at the same operation. Convalescence was satisfactory. In 1947 she had a questionable cholangitis and pylorospasm. She has been well since.

Mrs. F. H. was age 44. At exploration at the time of hysterectomy in 1942 gallstones were found in the gallbladder. Fifteen days later cholecystectomy was performed. After 12 years there has been no history of further gastrointestinal disturbance.

Mrs. A. L. was age 45. Exploration at the time of hysterectomy in 1942 revealed gallstones in the gallbladder. She was seen during the next few years for metabolic disturbances. In 1948 she had an acute exacerbation of her gallbladder trouble and a cholecystectomy was done. After her convalescence there is no further record.

A review of the fifteen records of patients who had gallstones shows that gallstones were diagnosed before operation and the diagnosis confirmed in 7 patients. The diagnosis was not made before operation in 8 patients. Cholecystectomy was done as a separate operation in 9 patients. Cholecystectomy was combined with the pelvic operation in 3 patients. Cholecystectomy was advised but the advice not taken by 3 patients. One of these was a woman age 62 who had a resection of a carcinoma of the sigmoid. She insisted that she would not live long enough to make the gallbladder operation worth while. She is living 12 years afterwards. One patient developed carcinoma of the breast soon after her gallstones were discovered. She was treated at another hospital for her carcinoma and died from the carcinoma. The third patient who did not follow the advice had extensive arteriosclerosis which made it difficult to reason with her.

The age at which gallstones were first discovered ranged from 21 to 70. They were distributed as follows:—third decade one, fourth decade four, fifth decade six, sixth decade two, seventh decade one and eighth decade one.

The records show that 5 of the patients were not seen or heard from after convalescence from the cholecystectomy. No gastrointestinal symptoms after the cholecystectomy were reported for 5 patients. One patient had vague abdominal symptoms and functional nervous disturbance. Two women had attacks similar to those experienced before cholecystectomy. Two of those who were advised to have cholecystectomy postponed their operation until serious complications arose.

When gallstones are present it is assumed that there is an associated cholecystitis. In addition to the 15 patients with stones and cholecystitis there were 7 classified as having chronic cholecystitis. The records indicate that cholecystitis without stones is far less significant than when stones are present. Mrs. C. H. was age 38. She had thickening of the gallbladder and a few adhesions at the time of exploration. She has been seen regularly for 12 years for cancer follow-up and has not complained of any symptoms referable to the gallbladder.

Mrs. M. had thickening of the gallbladder and enlarged glands, but when she was explored 5 years later these had subsided.

Miss C. R. was age 41. There was evidence from biliary drainage and from operation in 1942 which suggested chronic cholecystitis. At another operation in 1950 the gallbladder appeared normal.

Mrs. B. F. was age 47. Several operations were performed including one for volvulus in 1926 and umbilical herniotomy in 1927. At the time of these operations the gallbladder was normal. A normal pregnancy in 1928 was without abdominal symptoms. Cholesystectomy was performed in 1942 for acute cholecystitis and cholelithiasis. She has been seen frequently since then for a variety of complaints but none of these have been referable to the gallbladder.

Mrs. C. H. was age 38. At exploration in 1942 thickening of the gallbladder wall and a few adhesions were noted. She has been seen regularly every year for cancer follow-up and no symptoms referable to the gallbladder have been noted.

Mrs. S. B. was age 48. At exploration in 1942 thickening of the wall of the gallbladder and enlarged glands were noted and a diagnosis of cholecystitis was made. In 1949 she had a coronary occlusion and since then arteriosclerosis has developed rapidly. No symptoms have been suspected for the gallbladder.

Two patients with evidence of chronic cholecystitis have moved out of the city. Their follow-up has been inconclusive.

Since none of the patients who were assumed to have a chronic cholecystitis have had further symptoms one wonders if the criteria for the diagnosis are adequate. Did they really have cholecystitis? The number of these patients reported is too few to justify any conclusions.

The group of patients who had only adjesions is difficult to summarize because the character and extent of the adhesions varied so much. Several had previous cholecystectomies and the area from which the gallbladder had been removed was covered with adhesions. In other patients the adhesions were only a part of generalized adhesions throughout the abdomen. In the follow-up no symptom or complaint could justly be attributed to the adhesions.

Although this report is limited to the abdominal explorations for one year and includes only gallbladder lesions, the value of exploration is demonstrated. Above all the menace of gallstones is emphasized. There is no medical treatment for gallstones. They should be removed. Many of the thousands of deaths annually in this country could be prevented. Abdominal exploration followed by proper advice regarding the lesions discovered is good preventive medicine.

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THE VALUE OF THE TREPONEMA PALLIDA IMMOBILIZATION TEST (T.P.I.) IN THE DIAGNOSIS OF BORDERLINE CASES OF SYPHILIS

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It has become customary to consider syphilis a vanishing disease. It is true that early syphilis is now rarely seen in the average practice. There is still, however, a large reservoir of late forms of syphilis that frequently present serious diagnostic problems. Most of this late syphilis falls within one of four groups:

(1) Syphilis of the central nervous system.

(2) Syphilis involving the cardiovascular tract.

(3) Late latent syphilis characterized by positive standard tests for syphilis (S.T.S.) with or without a history of syphilis but showing on physical examination no demonstrable focus of infection. To be placed in this classification, the spinal fluid must be examined and found to be negative.

(4) A group of borderline cases where the decision as to whether the patient has or ever has had syphilis requires the most painstaking study. This borderline group can again be subdivided as follows:

(a) History, physical examination and spinal fluid negative. S.T.S. weakly positive and non-diagnostic.

(b) History, physical examination and spinal fluid negative. S.T.S. weakly positive, but with a history of past treatment for syphilis. A history of treatment does not establish a diagnosis of syphilis. In the past, many patients have been treated because a weak, non-diagnostic S.T.S. was found, or the patient had a biologic false positive S.T.S.

(c) A history and/or evidence of past syphilis. These patients have usually been treated, but the S.T.S. is so weak as to suggest a residual type of serologic reaction without remaining viable spirochetes.

(d) A positive S.T.S. that is strong enough to suggest an active infection, but with a negative physical examination, including a spinal fluid examination, and with the patient flatly denying any possibility of a venereal infection.

This borderline group is an extremely important one; both because of its large and growing numbers, and because every effort should be made not to attach the diagnosis of syphilis to a patient who does not now have, or never has had the disease. Furthermore, these tests that are not due to syphilis may give some clue to other disease processes.

That, numerically, this group is important has been shown by our own experience. The laboratory reports on 1747 different consecutive individuals showing any

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degree of positive reaction to the S.T.S., from a weakly positive with one antigen only to strongly positive reactions to all antigens, were studied. In this series, the Kline Exclusion test was done as a screen test. The Kolmer, Kahn and Eagle were done as diagnostic tests. In this series, 891 cases, or 51% of the entire group, a diagnosis of syphilis could be made with reasonable certainty. In 856 of these cases, or 49%, no diagnosis of syphilis was justified.

This is not to say that 49% of the laboratory tests for syphilis gave false reactions. Very few of these tests were biologic false positive in the sense that a strong diagnostic S.T.S. was reported in a patient not having syphilis. In most of these cases, the titres reported were so low or there was so much disagreement between the diagnostic antigens that it was at once apparent that additional evidence would be necessary to establish a diagnosis of syphilis. In fact, the accuracy of the laboratory in doing these sensitive tests and in recording the fluctuating titres, so characteristic of some of these cases, was of the greatest value in reaching a clinical diagnosis.

These results do show, however, that an increasing number of these non-diagnostic reactions are being reported; and as Magnuson[1] points out, as the actual amount of syphilis decreases, this group will remain stationary and so show a relative increase in numbers. We believe that this point has already been reached. Two other factors must also be considered. One is that the older age group is becoming larger and, secondly, a larger portion of the population is having blood tests for syphilis done. It is also obvious that any new diagnostic tests with increased specificity, even at the expense of some sensitivity, would be of great value in complimenting our present S.T.S. The Treponema Pallida Immobilization Test (T.P.I.) seems to be such a test.

It appears that we are to have this problem of the borderline cases as a continuing problem. A closer scrutiny of this group of 856 individuals is of value.

Moore[2] and others have emphasized the value that these non-specific positive reactions have in recognizing other diseases then syphilis. Lupus erythematosus, infectious mononucleosis, malaria, herpiforme diseases and "virus" pneumonia, among others, have been pointed out as being responsible, at times, for false positive S.T.S. All of these diseases appear in this group of 856 cases. The most numerous are the cases of lupes erythematosus; there being 8 cases, including both the discoid and disseminated varieties. All of the other diseases mentioned appeared in smaller numbers in this borderline group.

The age incidence is of interest and is as follows:

Decade	Number	Per cent
0–9	21	2.4%
10–19	11	1.2%
20–29	66	7.7%
30–39	180	21+%
40–49	181	21+%
50–59	196	22.8%
60–69	156	18%
70–84	45	5.2%
	856	99.3%

It is noted that 46% of this group are over 50 years of age. This is the group where the degenerative diseases would be expected. Their frequency and distribution are noted. In the interest of brevity, the following diseases have been grouped together:

1. Arthritis.
2. Arteriosclerosis.
3. Hypertension.
4. Heart disease.
5. Diabetes.
6. Obesity.
7. Malignancy.
8. Chronic infection including tuberculosis.
9. Thrombophlebitis and stasis dermatitis.

There were 271 individuals or 31.7% of the entire group showing one or more of these diseases. This is the largest of any of the divisions in this group and, as would be expected, individuals over 50 years of age predominated. 76.4% of the group were over 50 years old and 23.6% were under 50. It would seem that the degenerative diseases as a group might be responsible for more aberrant reactions then the acute diseases mentioned above.

The second largest group contained those individuals who had had or had been treated for syphilis, but who now showed no evidence of active disease except an uncertain S.T.S. There were 157 cases in this group, with 52.8% under 50 years of age and 47.2% above 50 years. As 46% of the entire borderline group are over 50 years of age, it would appear that the incidence of a history of syphilis or treatment for syphilis does not increase in the older age group.

There were 33 cases of pregnancy in this group of 856 cases. While the number was small, it was important that prompt decisions be made as to their status. The T.P.I. test would be of great value in making such a decision.

The introduction of the Triponema Pallida Immobilization Test (T.P.I.) by Nelson and Mayer[8] in 1949 added a powerful diagnostic agent to the S.T.S. already available. In this test, living pathogenic spirochetes obtained from inoculated rabbit testes are placed in the blood serum of the patient to be tested. The serum is divided into two parts. In one part, active complement is added to the blood serum to be tested; and in the other part, inactive complement is added. Both parts are then incubated for from 16 to 18 hours and the number of viable (motile) organisms is counted in both lots of serum. If the test is positive, most of the spirochetes in the serum containing the active complement will be immobilized or killed. The spirochetes in the serum containing the inactive complement will be active and motile. If the spirochetes remain motile in both lots of serum, the test is negative.

The antibody present in syphilitic serum that gives a positive reaction with the standard antigens used in tests for syphilis is known as reagin. It has been found that this is not the antibody that is responsible for immobilizing the spirochetes

in the T.P.I. test. A distinct immobilizing antibody is present and this antibody is not present in serum giving a false biologic reaction. Therefore, false positive tests are rare or even absent in sera that are not hemolyzed or contaminated.

This test as at present constituted is, in practice, both complicated and expensive. It is still in the research category and must be carried out by thoroughly qualified serologists. It is time consuming and the number of tests that can be done is strictly limited. It should, therefore, be used as a control test after all possible information has been obtained from the S.T.S.

The following facts should be kept in mind:

(1) The immobilization antibody appears in early syphilis shortly after the reagin that gives the positive S.T.S.

(2) If treatment is instituted promptly and the S.T.S. is rendered negative, the T.P.I. may also become negative.

(3) In late syphilis, however, although treatment may reverse the S.T.S. to negative, the T.P.I. will remain positive. Thus, a positive T.P.I. may mean that the patient has or has had syphilis and a reversal to negative is not to be expected even if treatment is successful.

Through the courtesy of Dr. Curtis and Dr. Wheeler of the Department of Dermatology and Syphilology at the University of Michigan, we have had 33 T.P.I. tests done. These were all on problem patients. Of these 33 tests, 16 were positive and 15 were negative. In only one case where the T.P.I. was negative were all the antigens of the S.T.S. strongly positive. This was in the case of a woman who was found to have a strong positive S.T.S. on pre-marital examination.

In no case where the T.P.I. test was positive was the S.T.S. completely negative. In the 16 cases showing positive T.P.I. tests, six had been previously diagnosed as probably not having syphilis. In the 15 cases showing negative T.P.I. tests, three had been previously diagnosed as probably having syphilis.

In all of these cases, the decision as to the presence of syphilis was recognized as uncertain, but the probable diagnosis differed from the T.P.I. test in 9 of the 31 cases.

In all borderline cases where a definite decision cannot be made through the usual diagnostic approach, a T.P.I. test should be done if possible.

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COMPARISON OF THE CAUSES OF STILLBIRTHS AND NEONATAL DEATHS

PHILIP J. HOWARD, M.D.*

The 390 neonatal and stillbirth records of the five-year period 1949 through 1953 are shown in Table I. There were 217 stillbirths and 173 neonatal deaths. These numbers are large enough to indicate the comparative causes of death in the two groups. There are in many cases, if not indeed in each one, three factors contributing to the death, a maternal factor, a delivery factor, and an infant factor, one of which is primary. Evaluation of these, and estimation of the primary one is important and often difficult, and has been done after careful review of each

TABLE I. STATISTICS FROM THE OBSTRETICAL AND PEDIATRIC SERVICES OF THE HENRY FORD HOSPITAL

Five Year Period	Totals for 5 Yrs.	Yr. 1949	Yr. 1950	Yr. 1951	Yr. 1952	Yr. 1953
Deliveries	11,145	2070	2233	2409	2360	2073
Stillbirths	217	44	45	33	59	36
Live Births	10,928	2026	2189	2376	2301	2037
Neonatal Deaths	173	30	44	37	36	26
Stillbirths per 1000 live births	19.7	21.7	15.5	13.8	25.6	17.7
Neonatal deaths per 1000 live births	15.9	14.8	25.1	15.5	15.6	12.7

maternal-child history. Primary maternal factors seemed at fault in 14.4% of the stillbirths, 5.1% of the neonatal deaths; primary delivery factors in 36.0% of the stillbirths, 4.4% of the neonatal deaths; and primary infantile factors in 49.6% of the stillbirths, and 90.5% of the neonatal deaths. The details of this classification are shown in Table II, A and II B.

MATERNAL FACTORS

Six maternal factors were considered a primary cause of death. The first was previous premature infants or abortions, and here is classed habitual abortion. Bundesen (1) found that 35% of multigravid mothers of previable prematures reported previous abortions. This condition must be controlled by maternal care, and in this series of 390 perinatal deaths was responsible for 11 of them. The second maternal factor was toxemia of pregnancy, responsible for 15 perinatal deaths. Twelve stillbirths and 3 neonatal deaths were caused by this disease. Bundesen (2) showed that the neonatal death rate was 50.2 per 1000 live births in toxemic mothers. Thus toxemia quadrupled the normal neonatal death rate. Toxemia obviously ranks high as a cause of both stillbirth and neonatal death.

The third maternal factor was heart disease, which caused 2 stillbirths, or 1.0% of them, but no neonatal deaths. Bundesen's (3) investigation showed that heart disease was present in 1.3% of neonatal deaths, but was not a primary cause of death in any.

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the necessity of constant diabetic control during pregnancy. In Bundesen's (4) series 0.5% of the neonatal deaths were due to maternal diabetes.

TABLE IIA—PERINATAL MORTALITY FOR 1949 THROUGH 1953 RELATED TO MATERNAL, DELIVERY, AND INFANTILE FACTORS

	Stillbirth		Neonatal Death	
	No.	%	No.	%
Maternal Factors	31	14.4	9	5.1
Delivery Factors	78	36.0	8	4.4
Infantile Factors	108	49.6	156	90.5
Total	217	100.	173	100.

TABLE IIB—NEONATAL DEATHS AND STILLBIRTHS FOR 1949 THROUGH 1953 RELATED TO MATERNAL FACTORS, DELIVERY FACTORS, AND INFANTILE FACTORS

	Stillbirth		Neonatal Death	
	No.	%	No.	%
A. Maternal Factors				
1. Previous Premature Infants or Abortions (Habitual Abortion)	7	32	4	2.3
2. Toxemia	12	5.5	3	1.7
3. Heart Disease	2	1.	0	
4. Diabetes	6	2.8	0	
5. Infections	3	1.4	2	1.1
6. Hypofibrogenemia	1	.5	0	
B. Delivery Factors				
Complicated Deliveries				
1. Mid or High Forceps	6	2.8	1	0.5
2. Breech Extractions	7	3.2	2	1.1
3. Caesarean Operations	8	3.7	1	0.5
4. Placenta-Separation, Previa, Infection, and Cord Compression	52	23.9	4	2.3
5. Ruptured Uterus, or Abd. Cyst	3	1.4	0	
6. Length of Labor	2	1.	0	
C. Infant Factors				
1. Abnormal Pulmonary Ventilation	0		77	44.5
2. Injuries at Birth	4	1.9	16	10.0
3. Malformations	26	12.0	47	27.0
4. Infections	1	.5	2	1.1
5. Erythroblastosis Fetalis	27	12.5	7	4.0
6. Anoxia	48	22.2	4	2.2
7. Miscellaneous				
1. Endocrine Gland Disease	0		0	
2. Intestinal Obstruction not Malformation	0		0	
3. Liver Disease	1	.5	3	1.7
4. Trauma other than Birth	0		0	
5. Others	0		0	
Totals	217	100	173	100

The fifth maternal factor was infection, including endometritis, Guillain-Barre disease, influenza with septaecemia, and all other infection. Here was found the cause of 3 stillbirths, and 2 neonatal deaths, the later immediate deaths of small

premature infants, with delivery precipitated by infection. Bundesen (5) does not list maternal infection as a direct cause of neonatal death, but notes that infection of the mother was present in 8.3% of neonatal deaths. The associated listing of stillbirths, some of which were certainly caused by material infection, points to its recognition as an important factor in perinatal mortality.

The sixth maternal factor hypofibrinogenemia is listed only because it actually appeared as the cause of one stillbirth. The condition when present leads to the most serious if not fatal hemorrhage, and must be controlled by massive injections of fibrinogen (6)

The fourth maternal factor was diabetes which caused 6 stillbirths and no neonatal deaths in this group. This was 2.8% of the stillbirths, and indicates

DELIVERY FACTORS

Six delivery factors were considered to be primary, but whereas delivery factors are often the cause of stillbirth, shown here as 36.0%, they are seldom an acceptable cause of neonatal death, shown here as 4.4%. If the infant is born alive, an improved opportunity is afforded to assess it as an individual, and to classify it as pulmonary failure. In the event of stillbirth, clearly anoxia has supervened, and it is a practical help in actually understanding the cause of death, to consider with care such a complication of delivery as is found.

The first delivery factor considered was mid or high forceps extraction judged to be the cause of 6 stillbirths, and one neonatal death. The second delivery factor was breech delivery judged to be the cause of 7 stillbirths, and 2 neonatal deaths. The third such factor was Caesarian delivery found to be the cause of 8 stillbirths and one neonatal death. It is well realised that these might be called birth injury, and in a special study shown in Table III all the neonatal deaths are reclassified solely on the basis of the infant's autopsy findings. Nevertheless, these were especially severe, complicated deliveries in each case.

The fourth delivery factor is one which can hardly be controlled in our present state of knowledge, placental and umbilical cord conditions. Here are classified 23.9% of the stillbirths and 2.3% of the neonatal deaths. If there was clear evidence of premature separation, of placenta previa, of umbilical cord infection, compression or rupture, the condition was listed here. It forms the largest group of stillbirth causes.

The fifth delivery factor was rupture of the uterus, and one abdominal cyst, causing 3 stillbirths. The sixth delivery factor was length of labor, the mother having in each of 2 cases precipitated a term stillbirth.

In view of the obvious fact that complicated, especially Caesarian deliveries, are often necessary as the clearly indicated treatment of toxemia premature separation, abruptio placenta, placenta previa, and diabetes, there is certain to be a high rate of fetal and infant loss here, and difficulty in deciding the primary factor.

INFANTILE FACTORS

Seven primary infantile factors, following the analysis of Bundesen (1) were considered. The first infantile factor was abnormal pulmonary ventilation. No

stillbirths were classed here, as the cause of anoxia in them, must be some previous step interfering with the oxygen supply from the maternal circulation. Seventy-seven (44.0%) of the neonatal deaths were classified here, this being the largest single group of deaths. This group includes most of the premature infants, as their death is very often due to atelectasis, and occasionally to pulmonary hyaline membrane disease. The Bundesen (7) group found this factor in 43.7% of neonatal deaths.

The second infantile factor was injuries at birth. Here are classified 4 (1.9%) stillbirths and 16 (10.0%) neonatal deaths. Bundesen (8) showed 16.6% neonatal deaths due to birth injury when all such deaths were considered as to infantile pathology. The neonatal deaths which were classified as birth injuries, had seven prematures among them, 2 under 1000 grams at birth, one 1410 grams, one 1580 grams, and three between 2000 and 2500 grams; eight of normal term weights, and one of 4315 grams. The types of deliveries were Caesarians 2, mid-forceps 1, induced normal 1, spontaneous prematures 6, and spontaneous term 6. In each case there was associated central nervous sytem injury and intracranial hemorrhage. There were examples of subdural hematoma, subarachnoid hemorrhage, ventricular hemorrhage, tearing of the falx and general petechial hemorrhages. These are samples of the difficulty encountered in any obstetrical service, and 16 is a small number in 173 neonatal deaths and in a series of 10,928 consecutive live births.

The third infantile factor was malformations, which caused stillbirth in 26 (12.0%) cases and was the cause of neonatal death in 45 (26%) instances. A partial answer to the question why does malformation appear less often in stillbirths than in neonatal deaths is found in Bundesen's (9) analysis where it is stated "mortality rates from malformation among previables (400 grams-1000 grams in birth weight) was 15 times that among term infants." The incidence then of malformation has a relation to size at birth.

The fourth infantile factor was infection of the infant which appeared in 1 (0.5%) stillbirth and 2 (1.1%) neonatal deaths. It was very rare as a complication and is becoming more exceptional with the general competent use of antibiotics.

The fifth infantile factor was erythroblastosis fetalis which caused 27 (12.5%) stillbirths, and 7 (4.0%) neonatal deaths. This condition is a serious threat as the fetal loss is so high. Bundesen (10) found 2.8% of neonatal deaths due to this cause.

The sixth infantile factor was anoxia and has been used for spontaneous normal deliveries where no pathology was found, or where the general petechial hemorrhage characteristic of anoxia was found. The 48 (22.2%) stillbirths were from normal gestations and deliveries except that some were premature. Intrauterine anoxia and spontaneous premature delivery are a major group of serious conditions. Four (2.3%) of the neonatal deaths were listed here as caused by anoxia, in each case a term infant, showing no other characteristic pathology. Bundesen (11) showed 3.8% of neonatal death in this group, his diagnosis being based on history of interference with oxygen supply, or subserous multiple petechial hemorrhages. The classification has been used in this study where no other localized pathologic process could be found.

The seventh infantile factor is a group of causes altogether responsible for one (0.5%) stillbirth and for 3 (1.7%) neonatal deaths. In our group of 390 perinatal losses, the only one of these conditions which appeared was liver disease.

In order to make our statistics as nearly comparable as possible to Bundesen's (1) Table III, has been prepared in which all neonatal deaths were classified on the

TABLE III—NEONATAL DEATHS CLASSIFIED BY SEVEN PRIMARY INFANTILE FACTORS*

	H.F.H.	Bundesen
1. Abnormal Pulmonary Ventilation	48.3	43.7
2. Injuries at Birth	15.6	16.6
3. Malformations	26.0	15.8
4. Infections	2.2	13.4
5. Blood Dyscrasia	4.0	5.3
6. Anoxia	2.2	3.8
7. Miscellaneous	1.7	1.4

*Bundesen.

basis of autopsy findings alone. There are only slight differences, a few more malformations and a few less infections appeared in our series. Other than these two groups, our percentages agreed with his to within five percent. This is understood as the Chicago study was based on 8905 autopsies on neonatal deaths, where ours was on 217 stillbirths and 173 neonatal deaths.

SUMMARY

Comparative figures have been kept of the causes of stillbirth and neonatal death, where the patients were under the direction of the same group of obstretricians and pediatricians, and over the same 5 year period. The primary cause of death has been classified as to maternal factor, delivery factor and infantile factor. In stillbirths the maternal factor was found respondible in 14.4%, the delivery in 36.0%, and the infantile in 49.6%. In neonatal deaths the maternal factor was found responsible in 5.1% the delivery in 4.4%, and the infantile 90.5%.

This classification of the two groups aids our understanding of where effort must be concentrated in the eternal effort to lower the percent of stillbirth and neonatal deaths.

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INTRODUCTION OF DR. RUSSELL L. DICKS

Frank J. Sladen, M.D.

The officers of the Henry Ford Hospital Medical Society would want me, I am sure, to acknowledge the presence of so many of the ministry and to bid them a very special welcome.

We will hear discussed some of the intangibles of medical care. I refer to what has to do with the spirit of the patient, of the doctor, of the institution, factors conducive to success, to recovery as well as factors that militate against it.

The emotional reactions to coming into the hospital—to going through a diagnostic study—to receiving the report—to facing an operation—to looking ahead to prolonged illness and care—to accepting a physical handicap, a stiff joint or loss of a limb—and to facing death, these are sufficient to provoke crises in patient.

These are the areas our speaker has pursued in study and research, and about which he has increased our knowledge and understanding. He has demonstrated what can be done by a chaplain to help make successful the experience of patients in a hospital, when that chaplain is specially trained for the purpose and succeeds in working closely with the staff, is in their confidence and accepted as one of the team.

It is now a proven fact that the combined efforts of medicine and religion, when soundly and intelligently pursued in the light of established scientific truths, are accomplishing new results. They are making easier and more effective difficult experiences of patients, and opening doors to new accomplishments by the greater emphasis on the better care of the spirit of the patient and of his environment.

Dr. Dicks is the pioneer in this field, the first full-time chaplain of a general hospital. That was in the Massachusetts General Hospital in Boston. Here, too, he did the first teaching of clinical pastoral training in a general hospital. Here, too, in 1932, he met Dr. Richard Cabot, professor of medicine in the Harvard Medical School. I am told Dr. Cabot became especially interested in this young man when he saw that he made a record of everything he did and heard and said, even his own prayers with the patients. Dr. Dicks, the chaplain, and Dr. Cabot, the professor of medicine, published the first professional book on ministry to the sick, now considered a classic.

He has served as chaplain in four hospitals in the last twenty years—the Massachusetts General Hospital of Boston, the Presbyterian Hospital of Chicago, the Wesley Memorial Hospital of Chicago, and currently the Duke University Hospital of Durham, North Carolina.

Dr. Dicks is a teacher with the spirit of research. He is the author of nine books and numerous articles and pamphlets and is the Editor of the magazine *Religion and Health*, aimed to bridge the gap between religion and medicine. At present, besides his chaplaincy, he is professor of Pastoral Care in the faculty at Duke University. No one is better qualified to talk to us on the subject "The Certified Chaplain and the Modern Hospital."

THE CERTIFIED CHAPLAIN IN THE MODERN HOSPITAL*

RUSSELL L. DICKS, PhD.**

In examining such a subject as "The Certified Chaplain in the Modern Hospital" we need to remind ourselves that the hospital for the care of the acutely ill, as we know it today, is a relatively new institution upon the scene. While the hospital has its roots in several hundred years of history, actually going back to the time when the sick and suffering were taken into churches and cathedrals for healing, the modern hospital as such is a product of the last century. And until the last century only the poor went to hospitals.

Further, we need to remind ourselves, and only a brief reminder is necessary, of the long and significant history of the church and clergy in establishing hospitals, not only in America but upon the Continent of Europe and in other parts of the world, especially in the Orient. The five oldest hospitals in Chicago are church institutions, and this would be true of many communities. The founding of a hospital by an industrialist, such as Mr. Henry Ford, or by the community, city or state or Federal Government is very recent, aside from mental hospitals and tuberculosis sanitariums.

Therefore, in a sense, such a subject as, "The Certified Chaplain in a Modern Hospital," would appear to be somewhat strange. The layman or physician, looking at this subject might be inclined to ask, "Has not the chaplain, as a representative of religion, been in the hospital from its beginning?" The fact is that he has not; not as I will presently present him, even in church related hospitals. True, in those hospitals that were founded and maintained by the sacramental churches, the Lutherans, the Episcopalians, and the Roman Catholics, there have always been clergy, usually elderly men, whose primary task was to carry the Sacrament to the seriously ill and dying. But as a person with unique contributions to make in the care of the sick, as a member of the professional team, available at the request of the physician as he requests other consultants and specialists, the chaplain is very recent.

By certification we mean not so much that one passes an examination and receives a certificate, although this actually is done now by The Chaplains' Section of the American Protestant Hospital Association, as that a chaplain has received certain training and may be expected to work in a certain way. It is with this latter that I want to deal in this paper for this is the heart of our subject.

In 1924 The Rev. Anton T. Boisen, a Congregational minister, became the first full time chaplain in a state mental hospital and in time came to be recognized as the father of The Clinical Pastoral Training Movement. This movement is an effort to give the student for the ministry the kind of experience, under supervision, by way of preparation for his later ministry, that the internship

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*Read before the Henry Ford Hospital Medical Society, April 13, 1954.

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affords the young doctor. Dr. Richard Cabot used to describe the internship "as that time when the young doctor makes his mistakes under some one else's responsibility." Actually it is an effort to give the doctor experience in carrying responsibility so that he is able to avoid mistakes that might otherwise be made, as well as to give him confidence in making decisions, carrying out and prescribing treatment.

Anton Boisen had been mentally ill. During his illness and following his recovery he became convinced that religion had much to contribute to the recovery of mentally disturbed persons. Upon his release from a Massachusetts state hospital he went to Boston where he met and studied with Dr. MacFie Campbell at the Boston Psychopathic Hospital and with Dr. Richard Cabot, who following World War I had resigned as Professor of Medicine at the Harvard Medical School to teach ethics at Harvard College.

You will remember something of Dr. Cabot's contributions in the field of medicine, the best known of which was the launching of Medical Social Work and the beginning of The Clinical Pathological Conference which led to the Cabot Case Records. Being a Boston blue-blood, a man of wealth, culture, and imagination, Cabot was quickly drawn to Anton Boisen and used both his influence and his checkbook to help Boisen launch his program. Earlier Dr. Cabot had urged for theological students what he called "a clinical year in work with those suffering from the infirmities of mankind." This plan was originally given in an address and later published in the Survey-Graphic in 1924. Boisen set out to meet this challenge although his own interests never seriously extended beyond the mental hospital.

To Dr. Boisen then, with Dr. Cabot's encouragement and advice, and through the courage of a hospital superintendent, Dr. William Bryan, goes the credit for first taking theological students into a mental hospital to gain experience. Those first students worked as attendants, studied case records, attended staff conferences and listened to lectures by the staff. The behaviour they observed and the ideas they heard expressed were a far cry from those they studied in the theological seminary and what they would use in their later work as pastors.

In 1930 The Council for the Clinical Training for Theological Students was incorporated with Richard Cabot as its first President and Dr. Flanders Dunbar as its director, and Dr. Phillip Guiles as field secretary.

In 1933 I went to The Massachusetts General Hospital as supervisor of theological students and later was appointed as chaplain there for The Boston Church Federation. Again, it was through the good offices, influence and financial support of Dr. Richard Cabot that such a project was possible in that conservative and complicated institution. It used to be said that it was almost impossible to get anything new started at The M. G. H. but once it was started it was almost impossible to get it stopped.

My own interest in The Pastoral Clinical Training Movement and ministry to the sick, like Dr. Boisen's, grew out of my own illness. As his mental illness took

him to the mentally ill so mine, a physical illness, took me to the physically ill in a general hospital.

Upon graduation from high school I developed tuberculosis of the left elbow which slowly progressed for three years. Finally, an orthopedic surgeon in Tulsa, Oklahoma, diagnosed the condition, opened the elbow and cleaned up the joint, but left it with motion as he did not know how to fuse an elbow. The disease promptly became active again; however, I was able to delay further treatment another year until I had finished college. When the Tulsa surgeon discovered that I planned to go east for graduate study he whimsically admitted, "Well, there are a few good orthopedic surgeons in New York City," and gave me a letter to the famed Dr. Russell Hibbs, founder of the New York Orthopedic Hospital. Two weeks after arriving in New York I reported to Dr. Hibbs, then in the later years of a great career, who, after examination ordered me into the hospital for immediate surgery, telling me bluntly, "That elbow is riddled with infection, but we may be able to save your arm."

At the New York Orthopedic I was operated upon by a young surgeon named Dr. Halford Hallock who had devised a method for fusing an elbow but had used the method only once and that was upon an early case while mine was well advanced. Later my x-rays were published when Dr. Hallock described his method, so that I have often said that while I may never be famous myself, I have at least been associated with a famous elbow.

During the months I was a patient at New York Orthopedic Hospital I received as good surgical care as could be obtained in the world, excellent nursing care, good dietary care, and total social service care; these four things are usually considered adequate for good medical care; and yet my religious faith ship-wrecked, adding mental anguish to the physical pain I had endured, so that if it had been possible I would have changed my profession upon recovery.

So it was that when I met Dr. Richard Cabot, early in 1933, to discuss the possibility of going to The Massachusetts General Hospital as a minister and he inquired, "Why are you interested in sick people?" I was able to give what to him was a satisfactory answer when I said, "I have been sick myself." His blunt response, which reveals the Cabot direct manner, or lack of manners, almost ruined our relationship before it got started when he said, "I'm glad you have." Whereupon I found it hard to pick up the conversation, for, without my knowing it then, my attitude was still marked by a deep feeling of hostility and resentment toward God for the severe suffering through which I had passed.

I mention all this to make clear my own attitude toward the subject under consideration and to show that my approach to the task of ministry to the sick is and always has been clinical rather than academic; it is rooted in personal suffering rather than in traditional theology. I became a chaplain, not because of religious conviction, but because in the hospital I felt I could find answers I had not found in the theological seminary and in the books.

During the years that have followed there has been a steady increase in the number of chaplains both in the mental hospitals and in the hospitals that care

for the acutely ill. Until now they number several hundred in church related hospitals, the Veterans Administration Hospitals, many tuberculosis sanitariums and infirmaries, non-secretarian private, state and federal institutions. Along with this development in the past ten to twelve years has come the employment of clinically trained instructors by the theological seminaries to teach what we call pastoral care and counseling. In these courses we not only deal with the subjects of ministry to the sick, dying and bereaved but study such problems as the emotional care of the child; premarital and marital counseling, work with alcoholics, problems of older people, anxiety problems in general, and that whole host of subjects that are meaningful as studied under the title of interpersonal relationships. You can well understand, however, that a person like myself continues to have as primary interest his concern for the sick.

THE WORK OF THE CHAPLAIN

The problems of existence, destiny and death are philosophical, not scientific. How came we here? Why do we suffer? What is the meaning of life? What happens after death? These questions arise in the sickroom, in the clinic, and in the consultation room, because suffering crystalizes them into definite form. That they are not specifically expressed more frequently is because we do not permit them to come out.

There are several major emotional problems commonly faced in illness and in the hospital, and I repeat they are *emotional* problems: the philosophical problems of pain, anxiety, hostility, or resentment, guilt feelings and loneliness.

In THE ART OF MINISTERING TO THE SICK, published in 1936 (Cabot and Dicks) Dr. Cabot wrote, "The sickroom brings us two challenges: the fact of pain and the problem of pain. If we see no plan or purpose in the universe, if we think life a happenstance and death a darkness, we have no problem of pain, only the fact to be remedied or checked. The doctor faces the fact of pain. His job is to conquer it. He must come to some terms with the philosophical problem also, if he is to keep his poise in the face of the fact. Some never do. Some dodge it. They still are useful technicians. Nurses often dodge it; some become bitter or dull under the suffering they see. Most of them pass pain by as one of life's mysteries. They hold it at arm's length and let it hurt them as little as possible. Like the doctor they concentrate their attention on relieving it."

Dr. David T. Smith, past president of The American Tuberculosis Association says, "The tuberculosis patient does not really begin his recovery until he accepts his disease." (*Religion & Health*, May, 1952). I have requested Dr. Smith to describe just what he means by *acceptance of the disease* and how it is done and he has agreed to do so. Perhaps this same principle would apply to other diseases.

In my opinion Dr. Smith is referring to what I would call the problem of existence: What is the nature of the world in which we live? How came it here? How does it operate? What is my relationship to it?

This seems to me to be the problem of the person who commits or attempts to commit suicide. That is what the alcoholic is attempting to do: destroy himself.

Getting drunk for him is dying, and each time he realizes may be his last. And alcoholism is now considered the third health problem of the nation.

In both the fields of medicine and religion we handle these problems badly. At one hospital in Chicago where I served as Chaplain frequently girls were brought into the hospital from the rooming house district near by who had attempted to commit suicide. It was customary to work very hard with these patients. Pump out the stomach, give the patient oxygen, glucose, put her on precautionary nursing, build her up and get her well, and then send her out without anyone talking to her about why she tried to take her life, how she felt about it, and what her future plans involved. In other words, no one discussed her conception of her destiny, what her act meant, or what life meant to her, and what possibility it might have for her.

Hostility or resentment is found in most prople who attempt to commit suicide, and I have heard social workers claim that the same thing is true in almost all girls who become pregnant out of wedlock. Guilt feelings take many forms and are found pretty generally in most people when one digs into the inner recesses of their minds in a non-threatening way. Loneliness and a sense of isolation tie in so closely with the above emotional reactions that one hesitates to even identify this condition separately. However, there are times that it can be so clearly recognized, and plays such a significant role in the behaviour of a person, that it must be identified.

How much of a role these emotional conditions play in causing disease is anyone's guess. Some authorities believe they play a significant role; that they block the force that makes for health, that force which the doctor calls "nature" and which Dr. Cabot said should rightly be called "God." Certainly they play a vital part in the rapidity of the patient's recovery. And it can be said definitely that they are responsible for that fifty to seventy-five per cent of patients without organic disease who come to the doctor and who are sent out without a resolution of their problems.

There are five situations that the doctor faces in the hospital that I think the chaplain can be uniquely helpful in, and when I say "uniquely" I mean in dealing with the emotional-philosophical problem in these situations.

(1) With the patient facing serious major surgery. A surgical operation is a religious experience for the patient, whatever it may be for the surgeon. I have heard surgeons say that they disliked to operate upon a patient with a guilty conscience. A woman facing surgery the next morning told me of having told a lie ten years before. This was her effort to prepare for the operation the next day.

At Barnes Hospital in St. Louis where an unusual operation is performed upon women that have advanced cancer of the pelvic region, that involves not only a complete removal of the pelvic organs but a closing of both the rectum and the vagina, the chaplain routinely sees the patient two or three times before the operation. This is done at the request of the surgeon who first explains to the patient about the procedure and tells her that he has requested the chaplain to see her to

help her accept the operation and the post-operative condition that it involves. The surgeon who performs this daring operation has given his chaplain, George Bowles, adequate briefing in understanding the operation so that he can perform his supportive role.

(2) The patient who has suffered excessive pain needs to be seen by the chaplain. It is not that he can do much to relieve the pain. That is the job of the doctor and nurse. But he can help the patient understand and accept the pain when it is past. This is the problem I referred to above under the head of existence; it faces the question of how God functions in relation to the individual.

(3) Long convalescence such as the tuberculosis or the heart patient is facing calls for spiritual-emotional help. Closely linked with this situation is the problem faced by the handicapped person. These problems may be referred to as the problem of destiny. What can I do with my life? What does my illness mean? Why did this happen to me? I remember a twenty-four year old Jewish boy with almost every joint in his body stiffened by arthritis saying to me, "What does life hold for me? I can't even feed myself!"

The problem of destiny is faced outside the hospital as well as inside. In fact it may be considered one of the most basic and general philosophical problems of our people today, and undoubtedly, difficulty with it leads to the steady increase of anxiety that fills the doctors' offices and psychiatric institutions.

Has medicine an answer for this problem? Often even the doctor becomes discouraged with his reasons for being a doctor. I am not saying that religion has a satisfactory or acceptable answer for everyone, for the minister too gets discouraged, and a certain number kill themselves, but destiny and the meaning of life is a problem with which religion has traditionally dealt.

(4) There are many problems involved in the care and management of the dying that need careful study. There is the fact of dying and fact of death that need to be distinguished. Many patients worry about the fact of dying and seem to give little thought to the fact of death. "I was afraid I would not be able to die like a man," one patient said, "I didn't worry about the other."

Not all patients want to talk about death or dying, but some do. Not all want the ministrations of the church, but when offered in a non-threatening and non-punishing way most of them welcome the chaplain and come to depend upon his daily visits, drawing comfort, poise and courage from his faith and hope.

I remember a young woman facing death with sub-acute bacterial endocarditis whose doctor asked me to see her, but failed to tell her. When I introduced myself she said, "I don't like ministers." And yet a few weeks later it was not uncommon for the nurse to call me and say, "Lydia can't get to sleep. Will you come by and see her?" A few words and a brief prayer were all that were necessary to help her relax and fall asleep. Again, a matter of acceptance, whatever that word means.

(5) We have enough experience to indicate that whenever a patient upon admission to the hospital gives a history of grief, of death or separation, within a

year, from someone dear, a consultation by the chaplain is indicated. Grief, loneliness, separation, a sense of isolation, the breaking of a significant interpersonal relationship is serious in the lives of most persons. If the hostility is toward God, because the individual feels that God took, or killed, his loved one, then the chaplain may be quite helpful for the chaplain symbolizes God. Expressing hostility to him is like expressing it directly to God, and the relief is greater consequently.

In conclusion let me say, the certified chaplain, as trained and developed by the Clinical Pastoral Training Movement of the Boisen-Cabot tradition centers his attention upon the suffering person and his needs, not upon the doctrines and formulas of traditional religion. He seeks to be understanding and avoids judgemental and punishing attitudes. He is motivated by three scenes from the New Testament, (1) The Story of the Good Samaritan, in which the traveller does not ask if the sick and injured person is worthy or a "Christian," but only that he has needs; (2) The Story of the Prodigal Son, wherein one who seeks only to avoid starving is given a royal banquet; (3) The Story of the Thief on the Cross, who asks for nothing, not even for forgiveness but is accepted into paradise because of his attitudes.

These three stories the chaplain believes reveal the deep nature of the universe which at its heart is healing. "I dressed the wound, God healed it," said Ambroise Pare.

Programs of Meetings

THE HENRY FORD HOSPITAL MEDICAL SOCIETY

Program for Autumn 1954

October 12, 1954—Tuesday, 8:15 p.m.—Henry Ford Hospital Auditorium

The Low Salt or High Water Syndrome

Elliott V. Newman, M.D., *Professor of Experimental Medicine*, Vanderbilt University School of Medicine.

November 9, 1954—Tuesday, 8:15 p.m.—Henry Ford Hospital Auditorium

The Hormones of the Posterior Pituitary

Vincent du Vigneaud, Ph.D., *Professor of Biochemistry*, Cornell University Medical College.

December 14, 1954—Tuesday, 8:15 p.m.—Henry Ford Hospital Auditorium

Primary Tumors of the Hand

Robert H. Clifford, M.D., *Surgeon in Charge, Division of Plastic Surgery*, Henry Ford Hospital.

Gynecomastia

Richmond W. Smith, M.D., *Physician in Charge, Division of Endocrinology*, and A. P. Kelly, Jr., M.D., *Associate Surgeon, Division of Plastic Surgery*, Henry Ford Hospital.

HENRY FORD HOSPITAL MEDICAL ASSOCIATION BIENNIAL MEETING

Program

TO BE HELD

Friday and Saturday, November 12 and 13, 1954

IN THE AUDITORIUM of the CLINIC BUILDING

Friday, November 12th.	9-12 a.m.	Eight scientific papers, 15 mins. in length.
	1-4 p.m.	Presidential address followed by 5 scientific papers.
	7 p.m. on	Dinner dance, Statler Hotel
Saturday, November 13th	9 a.m. to 12 noon	Sectional Meetings will be held in all divisions.

International Symposium

THE HYPOPHYSEAL GROWTH HORMONE, NATURE AND ACTIONS

October 27, 28, 29, 1954

The professional staff of the Henry Ford Hospital with the initial advice and support of The Board of Trustees and Dr. Robin C. Buerki, Executive Director, of the Henry Ford Hospital, is sponsoring an international symposium on the subject The Hypophyseal Growth Hormone, Nature and Actions. This symposium will be held at the Henry Ford Hospital, October 27, 28, and 29, 1954, in the new auditorium. The preliminary program follows and has been prepared with the help of the advisory members.

Advisory Members:

Edwin E. Hays	Director of Research, Armour and Company, Chicago
Choh Hao Li	Professor of Biochemistry, University of California, Berkeley
C. N. H. Long	Sterling Professor of Physiology, Yale University School of Medicine, New Haven
Ephraim Shorr	Associate Professor of Medicine, Cornell University Medical College, New York

Local Members:

Richmond W. Smith, Chairman

Oliver H. Gaebler, Vice-Chairman

C. Paul Hodgkinson

Joseph A. Johnston

Paul D. Bartlett

Preliminary Program

1st Morning Session

Bioassay, Preparation and Physicochemical Properties of Growth Hormone

What is Growth?

Methods of Detection and Assay of Growth Hormone

Factors Influencing the Tibia Test

Comparative Biochemistry of the Hormone from Ox, Sheep, Pig, Horse and Fish Pituitaries

Somatotropin (Ox) as a Protein

1st Afternoon Session

Effects of Growth Hormone on Certain Structures

Growth Hormone and the Digestive System

Effect of Somatotrophic Hormone (STH) Upon Inflammation

The Effect of Hormones on Differentiated Tissues in Culture

Effect of Growth Hormone on the Skeletal System

Growth Hormone and Renal Function

1st Evening Session

Reminiscences in the Field of Growth Hormone Investigation

2nd Morning Session

Growth Hormone and Energy Sources

Importance of the Nutritional State to the Biological Function of Growth Hormone

Growth Hormone and Nitrogen Retention

Effects of Growth Hormone on the Metabolism of Amino Acids

The Role of Insulin in Nitrogen Retention

Effect of Growth Hormone on Liver Proteins and Nucleic Acids

2nd Afternoon Session

Growth Hormone and Energy Sources

Diabetogenic Actions of Growth Hormone

Relation of Diabetogenic and Fat Mobilizing Actions of Pituitary Preparations to Growth Hormone

Relationship of the Adrenal Cortex to the Diabetogenic Action of Growth Hormone

Growth Hormone and Fat Metabolism

Factors Involved in the Ketogenic Action of Growth Hormone

2nd Evening Session

Patterns of Growth in Human Organisms

3rd Morning Session

Growth Hormone and Cellular Systems

Effect of Pituitary Hormones on Isolated Tissue Metabolism

Effect of Growth Hormone on Transaminases and Other Enzyme Systems

Antagonism **in vitro** Between Insulin and Pituitary Hormones

The Influence of Growth Hormone on Blood Insulin and Glucagon Activity

The Influence of Growth Hormone and Other Factors on the Islets of Langerhans and the Pancreas

3rd Afternoon Session

Effects of Growth Hormone and Other Hormones on Mammary Gland Structure and Function

Metabolic Effects of Growth Hormone in Human Subjects

General Remarks Concerning Growth Hormone

PARTICIPANTS

Astwood, Edwin B.	Boston, Mass.
Baker, Burton L.	Ann Arbor, Mich.
Bartlett, Paul D.	Detroit, Mich.
Bennett, Leslie L.	Berkeley, Cal.
Best, Charles H.	Toronto, Canada
Browne, J. S. L.	Montreal, Canada
Campbell, James	Toronto, Canada
Copp, D. Harold	Vancouver, Canada
Cori, Carl F.	Saint Louis, Mo.
Cori, Gerty T.	Saint Louis, Mo.
de Bodo, Richard C.	New York, N. Y.
Dougherty, Thomas F.	Salt Lake City, Utah
Ellis, Stanley	Berkeley, Cal.
Engel, Frank L.	Durham, N. C.
Evans, Herbert M.	Berkeley, Cal.
Fell, Honor B.	Cambridge, England
Folley, Sydney J.	Berkshire, England
Gaebler, Oliver H.	Detroit, Mich.
Geschwind, Irving I.	Berkeley, Cal.
Greenbaum, A. L.	London, England
Haist, Reginald E.	Toronto, Canada
Hisaw, Frederick L.	Cambridge, Mass.
Houssay, Bernardo A.	Buenos Aires, Argentina
Kinsell, Laurance W.	Oakland, Cal.
Krahl, Maurice E.	Chicago, Ill.
Lee, Milton O.	Washington, D. C.
Li, Choh Hao	Berkeley, Cal.
Long, C. N. H.	New Haven, Conn.
Lukens, F. D. W.	Philadelphia, Pa.
Lyons, William R.	Berkeley, Cal.
McHenry, E. W.	Toronto, Canada
Park, C. R.	Nashville, Tenn.
Raben, Maurice S.	Boston, Mass.
Randle, P. J.	Cambridge, England
Reid, Eric	London, England
Russell, Jane A.	Emory University, Ga.
Segaloff, Albert	New Orleans, La.
Selye, Hans	Montreal, Canada
Shaw, J. C.	College Park, Md.
Shorr, Ephraim	New York, N. Y.
Simpson, Miriam E.	Berkeley. Cal.
Tepperman, Jay	Syracuse, N. Y.
Washburn, Alfred H.	Denver, Colo.
Weiss, Paul	Washington, D. C.
White, Harvey L.	Saint Louis, Mo.
Wilhelmi, Alfred E.	Emory University, Ga.

ABSTRACTS OF RECENT PUBLICATIONS OF THE PROFESSIONAL STAFF OF THE HENRY FORD HOSPITAL AND THE EDSEL B. FORD INSTITUTE FOR MIDICAL RESEARCH

STUDIES ON THE SITES OF METABOLISM, DISTRIBUTION AND TOLERANCE DEVELOPMENT TO CERTAIN THIOBARBITURATES.

ANNETTA R. KELLY, Ph.D., D.Sc. University Press, Ann Arbor, Mich., 1954. xi 110 pp., 23 illus.

Prior to 1939, the assumption was made, both by clinicians and experimentalists, that the liver constituted the main site of detoxication for the short-acting thiobarbiturate, thiopental (Pentothal). Beginning in that year, contradictory views became increasingly prevalent in the literature, and, by 1945, several reports had appeared which agreed that the liver was *not* involved in the detoxication of this thiobarbiturate. Feeling that methods employed in a number of these investigations were questionable, in 1946, studies were initiated by the author in an attempt to resolve this controversy. Portions of the work on thiopental and several other thiobarbiturates were published in ten papers in the succeeding three-year period, some in collaboration with Dr. Frederick E. Shideman. This monograph deals primarily with unpublished data and includes a chronological survey of the significant advances in the field of thiobarbiturate metabolism up to the present time. In addition to evaluating the role of the liver in the metabolism of thiopental, Surital, Thioethamyl and B-10 (5-isopropyl-5- [2-methylpentenyl-2] -2- thiobarbituric acid), studies on the plasma and tissue distributions of these compounds, as well as tolerance development and potentiation, were reported.

In *Part I*, data obtained by the following methods (five *in vivo* and one *in vitro*) definitely implicated the liver as a major metabolic site for these thiobarbiturates in man and three animal species: (1) Production of liver dysfunction in the mouse by use of an hepatotoxic agent; (2) reduction of the amount of functioning liver tissue in the rat by subtotal hepatectomy; (3) reduction of blood flow through the liver by production of an Eck fistula in the rat and dog; (4) comparison in patients with normal and decreased hepatic function; (5) comparison of rates of disappearance from plasma in the dog heart-lung, heart-lung-liver, and heart-lung-kidney preparation; and (6) *in vitro* degradation of the drug by rat liver tissue. Significantly increased durations of action of the thiobarbiturates were demonstrated with liver dysfunction produced by methods (1-4) above. Eck fistula dogs (3), in addition, showed elevated plasma levels and slower rates of removal from plasma than normal. Disappearance rates of thiopental from plasma in the intact animal, dog heart-lung, heart-lung-kidney, and heart-lung-liver preparation (5) were 12.6, 1.2, 6.2 and 15.2 per cent per hour, respectively. *In vitro* degradation (6) of thiopental by rat-liver slices and mice was demonstrated.

Part II deals with plasma and tissue distributions of the four thiobarbiturates. Plasma time-concentration curves and anesthetic durations were obtained in dogs following single equimolar doses of the thiobarbiturates and, despite differences in side-chain structure and durations of action, they were observed to dis-

appear at identical rates. As the anesthetic duration (potency) increased, the plasma level at the point of recovery declined. Potency ratings, calculated for the thiobarbiturates by both of these criteria, were compared.

Plasma disappearance curves for various doses of thiopental were parallel, but plasma levels at recovery increased with dosage.

Concentrations of thiopental in mouse plasma, liver and kidney were determined at intervals following intravenous injection. Ratios of liver and kidney concentrations to that of the blood indicated that equilibrium occurred within one minute after injection of the drug, the liver containing a concentration almost four times that of blood and kidney twice.

Part III is devoted to tolerance development and potentiation in relation to thiopental. Acute tolerance to the depressant action of the drug was demonstrated in the dog. After a large dose of thiopental, the plasma level of the anesthetic at awakening was found to be significantly higher than after a small dose. After several small doses (each administered after apparent recovery from the last) increasing durations of action were obtained, and plasma levels at awakening increased with each succeeding dose.

Administration of a single daily 20 mg./kg. dose for seven days showed no evidence of tolerance or cumulation in the dog. Two doses of this size per day demonstrated marked cumulation, but also recovery at significantly higher plasma levels. Development of central respiratory tolerance with this latter dose was investigated but could not be demonstrated.

A large number of malonic and thiobarbituric acid derivatives, which were theoretically possible thiobarbiturate degradation products, were screened for ability to potentiate these thiobarbiturates. Thiourea and thiobarbituric acid were each found to potentiate thiopental but only in amounts too large to be possible degradation products.

TUBE FEEDING WITH LIQUEFIED WHOLE FOOD. James Barron and Laurence S. Fallis. Surg. Forum (1953) p. 519.

This article orginally appeared in this journal, 1:13, June, 1953.

*GROWTH AND THE METABOLISM OF GLUTATHIONE. Paul D. Bartlett. Fed. Proc. 13:179, 1954

Implication of glutathione in the biogenesis of peptides and proteins makes the study of the metabolism of this compound in normal and induced states of growth of considerable interest. Using the method of Grunert and Phillips (Arch. Biochem. 30:217, 1951), we have determined glutathione concentrations in liver, tibialis anticus muscle, and blood of rapidly growing immature rats (Group I), of hypophysectomized rats (Group II), and of hypohysectomized rats stimulated with growth hormone (Group III). Glutathione determinations were made in tissue and blood obtained from each animal and average group values calculated. Liver glutathione concentrations of 169,207, and 188 mg/100gm wet tissue were thus found for Groups I, II, and III respectively; while muscle glutathione gave average

*From Edsel B. Ford Institute for Medical Research.

values of 15.4, 12.7, and 19.2 mg/100 gm wet tissue. Blood glutathione concentrations averaged 22.6, 18.7, and 22 mg% respectively for the 3 groups of rats. In another similar series of rats, N^{15} labeled glycine was administered intraperitoneally and the uptake of N^{15} label determined in the liver glutathione isolated as the copper mercaptide from the pooled livers of the animals in a group. Nitrogen from the liver glutathione of Groups II and III contained approximately 3 times as much excess N^{15} as the nitrogen from the liver glutathione of Group I rats. The rate of incorporation of the N^{15} label of glycine in glutathione thus appears to be higher in hypophysectomized than in rapidly growing immature rats and to be unaffected by growth hormone.

*ACTION OF DIHYDROCHOLESTEROL ON CHOLESTEROL TYPE FATTY LIVERS. WILLIAM T. BEHER, WILLIAM L. ANTHONY, and O. H. GAEBLER. Fed. Proc. 13:180, 1954.

Several investigators have found that soy bean sterols and dihydrocholesterol (*I*) prevent hypercholesterolemia and deposition of cholesterol in arteries of rabbits and chicks fed high cholesterol diets. We have studied the effect of *I* on deposition and mobilization of liver cholesterol, and the possible mechanism of this action, in mice. In the first series of studies, 2 groups of mice were fed diets rich in cholesterol. One group also received a fixed amount of *I*. Each group was further separated into subgroups receiving varying amounts of cholic acid. Results showed that *I* was very effective in preventing cholesterol deposition in mouse liver. Furthermore, increasing dietary cholic acid increased the effectiveness of *I* in this respect, and optimal amounts kept liver cholesterol at the control level. Our second series of experiments was concerned with the mobilization of liver cholesterol. Several groups of mice were fed diets high in cholesterol until substantial amounts of liver cholesterol had been deposited. The animals were then separated into 2 groups, one of which received cholesterol-free diet, while the other group received the same diet with the addition of optimal amounts of cholic acid and *I*. The animals were sacrificed at intervals over a 6-wk. span. The results showed that liver cholesterol decreased at about the same rate in both groups of animals. Thus, *I* was effective in preventing cholesterol type fatty livers in mice, but was ineffective in hastening mobilization of deposited liver cholesterol.

STUDIES ON CAPILLARY RESISTANCE AFTER INTRAVENOUS INFUSIONS. V. G. BEHRMANN, and F. W. HARTMAN. Fed. Proc. 13:10, 1954.

In an evaluation of plasma expanders evidence of decreased capillary resistance was observed following a hemorrhage-replacement technic and a massive infusion in intact dogs with dextran, polyvinyl pyrrolidone and modified fluid gelatine. Oozing of wounds and autopsy findings of hemorrhagic areas in heart, duodenum, pancreas and kidney indicated increased capillary permeability. Current studies of variations in capillary resistance associated with the administration of intravenous solutions are extended to include other solutions, larger groups of animals and man, along with appropriate counter measures for combatting abnormal capillary permeability.

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*From Edsel B. Ford Institute for Medical Research.

CRYPTOCOCCOSIS (TORULOSIS) INVOLVING THE BRAIN, ADRENAL AND PROSTATE. HAROLD E. BOWMAN and JAMES O. RITCHEY. J. Urol. 71:373, 1954.

Cryptococcosis is a subacute or chronic infection and the lesion may occur in any part of the body. The fungus involves primarily deep-seated organs with a predilection for the brain. The casual agent is a Cryptococcus (frequently called Torula histolytica), a yeast-like fungus reported from many parts of the world. This is a hitherto unpublished case of meningo-encephalitis due to Cryptococcus neoformans with lesions in the left adrenal and prostate. This case is unusual in two aspects because of the lack of lung involvement and the presence of infection of the prostate. This is the third such case reported with prostatic involvement. The total number of cases of systemic torulosis now in the literature is well over the two-hundred mark. It is hoped that with the addition of new cases to the literature from many areas the clinician will become more aware of cryptococcus infections and increase the frequency of recognition of this entity.

USE OF CORTISONE IN THROMBOCYTOPENIC PURPURA; PREOPERATIVE AND POSTOPERATIVE MANAGEMENT OF PATIENTS. BROCK E. BRUSH, RAYMOND W. MONTO, JOSEPH ABRAHAM, E. J. GORDON and J. RALPH CALDER. Arch. Surg. 68:787, 1954.

Twenty-one patients with idiopathic thrombocytopenic purpura who had splenectomy without mortality are presented. Cortisone was of value in the management of those in the acute phases of the disease. While corticotropin and cortisone have been disappointing as a form of treatment for patients with idiopathic thrombocytopenic purpura, they are of value in the preparation of patients for splenectomy. No ill effects from this use of cortisone could be noted, and no postoperative complications occurred. The cortisone dosage used was 200 mg to 300 mg daily for 10 days preoperatively and 50 mg to 300 mg daily for 3 days postoperatively.

THE PULMONARY ASPECTS OF POLYARTERITIS (PERIARTERITIS) NODOSA. HOWARD P. DOUB, BEN E. GOODRICH and JAMES R. GISH. Am. J. Roentgenol. 71: 785, 1954.

The roentgen appearance of the lung in polyarteritis nodosa is of equivocal nature. Only a few accounts have appeared in the literature, consisting of reports of one or several cases with positive lung findings. Nineteen proved cases of polyarteritis nodosa are reported. Eight autopsied cases showed characteristic lesions in pulmonary or bronchial arteries or in both. Roentgenological pulmonary abnormalities were present in six cases. These findings are not specific but may be suggestive. Major pulmonary symptoms or parenchymal roentgenological abnormalities indicate a poor prognosis.

(The following summary is from a paper) THROMBOPHLEBITIS MIGRANS AND VISCERAL CARCINOMA PRESENTED BY DR. ROBERT H. DURHAM AT THE INTERNATIONAL CONGRESS ON THROMBOSIS AND EMBOLISM HELD IS BASLE, SWITZERLAND, JULY 20-24, 1954:

Thrombophlebitis migrans is frequently the initial manifestation of obscure

visceral carcinoma. Although the growth may originate in any organ, it is more often found in the body or tail of the pancreas. This unique relationship is unexplained. Local histological and bacterial factors are not consequential, etiologically. The usual measured factors in coagulation are unchanged. These recurrent and multiple thrombi almost invariably occur in the presence of a mucinous type of carcinoma. The same coagulative phenomenon is exhibited whether the carcinoma originates in the pancreas or is metastatic to that organ. The incidence of thrombophlebitis migrans increases as the gradient of malignancy is higher. Surgical removal of the original growth usually causes cessation of the thrombophlebitis. Resistance to usual doses of anticoagulant therapy is frequently observed. Etiological interest centers around a disturbance of proteolytic and mucolytic enzyme effects. These and other challenging tangibles offer newer investigative approaches in the study of this one facet of the problem of thrombogenesis.

A review of these basic facts warrants certain clinical assumptions:

The occurrence of typical thrombophletbitis migrans in a patient in the middle or latter decades warrants a presumptive diagnosis of visceral carcinoma, until disproved.

Prompt recognition of this type of thrombophlebitis may permit detection of carcinoma months earlier than it would otherwise be discovered.

Earlier diagnosis will afford more prompt use of protective anticoagulant therapy or earlier and more successful surgical procedures.

Unsuccessful control of thrombophlebitis migrans by ordinary doses of anticoagulants should make one suspicious of the presence of carcinoma.

A better understanding of the factors concerned in thrombophlebitis migrans should throw new light on the entire problem of thrombogenesis.

A more complete analysis of the biochemical changes involved in these associated conditions should also provide simultaneously a reliable test for the presence of carcinoma—a goal for which the medical world is waiting.

Interpretors simultaneously presented the paper and the ensuing discussion to the Congress in the other official languages, French and German.

FRACTURE-DISLOCATION OF THE ANKLE WITH THE FIBULA FIXED BEHIND THE TIBIA. Joseph L. Fleming and Harold O. Smith. J. Bone & Joint Surg. 36A:556, 1954.

In 1947, Bosworth reported five cases of fracture-dislocation of the ankle in which the proximal fragment of the fibula became caught behind the flaring distal posterolateral portion of the tibia. In the first case, a recent fracture, reduction by manipulation was impossible. At open reduction, the reason for this was found to be the posterior displacement of the fibular-shaft fragment, which was held tightly in place behind the posterolateral tibial ridge by the tense interosseous membrane. By prying the fibula away from the tibia, reduction of the dislocation was accomplished with a loud snap. In a second case, also a recent fracture, similar treatment was used. The authors were able to treat a similar displacement

by closed reduction. To their knowledge, it was the seventh case on record, and the first to be treated by closed reduction. Detailed description of the treatment with roentgenograms is included.

EFFECTS OF ACTH ON STRENGTH OF INTESTINAL ANASTOMOSES IN DOGS. Thomas Geoghegan and Brock E. Brush. Proc. Soc. Exper. Biol. & Med. 86:235, 1954.

Since the original observations by Ragan concerning the retardation of wound healing in patients by ACTH, several studies have been done dealing with this phenomenon. The investigations of Ragan, Spain, and others in rabbits and mice indicate that ACTH retards the healing of wounds. Recent experiments on skin wounds in guinea pigs and rats, and on skin wounds and cardiovascular suture lines in dogs failed to demonstrate significant differences in the healing of wounds of control animals and those treated with ACTH or cortisone. The conflict in these experimental results may be attributable to differences in the species of experimental animal, the particular tissue studies, or to the dosage of the hormone used. Suture line leakage was not observed in a series of 10 dogs given large daily doses of ACTH following end to end anastomosis of the colon. The strength of the suture lines was not significantly altered by ACTH administration as compared with non-treated controls. No correlation was evident between the amount of ACTH given and the strength or gross appearance of the anastomoses.

TUBE FEEDING IN ORAL SURGERY. Fred A. Henny and James Barron. J. Oral Surg. 12:238, 1954.

Substantially the same material appeared in the original article—Henry Ford Hosp. M. Bull. 2:13, June 1953.

THE INCREASING IMPORTANCE OF LUNG CANCER AS RELATED TO METASTATIC BRAIN TUMORS. Edwin M. Knights. J. Neurosurg. 11:306, 1954.

Pulmonary carcinoma, which very definitely seems to be undergoing an absolute increase in frequency, accounted for almost one-fourth of the metastatic tumors of the brain in this series, and must be given very serious consideration in attempting to locate the primary site of a metastatic lesion. Carcinoma of the breast, however, is the most frequent primary site in females, and accounted for exactly half of the metastases in the females in this series. The necessity of careful study of the lungs in patients showing symptoms of cerebral tumors was further emphasized by the finding of either primary or secondary cancer in the lungs of 77 of the 102 patients. Approximately 6900 autopsies were reviewed in this study.

THE SURGICAL TREATMENT OF CARDIOSPASM; PRELIMINARY REPORT. Conrad R. Lam. Texas State J. Med. 50:13, 1954.

The term "cardiospasm" has been used frequently to indicate a benign obstructive lesion at or near the junction of the esophagus with the stomach, usually associated with marked enlargement of the esophagus. Probably because the cause is obscure, there has been disagreement concerning the name which best

describes the condition. As early as 1913 the German surgeon Heller had described his operation of extramucosal cardioplasty. This was a Ramstedt procedure at the cardiac rather than the pyloric end of the stomach. Personal experience with 18 cases of cardiospasm (mega-esophagus, achalasia, esophageal dystonia) has been presented. Cardioplasties of the Wendel type were done in 9 cases with unsatisfactory end results because of the incidence of esophagitis and peptic ulceration. Extramucosal cardiomyotomy of the type proposed by Gottstein and first performed by Heller has been carried out in 9 cases with gratifying results.

COMBINED PROCEDURES FOR VIRUS INACTIVATION IN BLOOD.

F. W. Hartman, Gerald LoGrippo and A. R. Kelly. Fed. Proc. 13:430, 1954.

The concentrations of virucidal chemical compounds which were found effective for the inactivation of test viruses in plasma were found inadequate for whole blood. Further, the larger concentrations of the chemical required for inactivation produced hemolysis. Multiple approaches to the problem have been studied: 1) chemical combinations below the hemolyzing level with nitrogen mustard, sulphur mustard, ethylene oxide, N-chloro-p-quinonimine, toludine blue and ultraviolet. 2) Chemical neutralization of the virucidal agent used in large concentrations, after period of virus inactivation, on plasma and red cells. 3) Treatment of the red cells after concentration by removal of the interfering plasma followed by reconcentration of red cells and discard of sterilizing chemical solutions. 4) Treatment of large plasma volumes with diluted inactivating chemical in increased volumes and mixed continuously, with subsequent precipitation of the plasma proteins and fractionation.

ANTIGENICITY OF BETA-PROPRIOLACTONE INACTIVATED VIRUS.

Gerald A. LoGrippo and Frank W. Hartman. Fed. Proc. 13:503, 1954.

Beta-propriolactone (BPL) was reported by Hartman et al. to have in vitro virucidal properties in the presence of 90% plasma. In this study BPL inactivated MM-virus was tested for antigenicity. Aliquots from a 10% MM-virus suspension were used: a) in the untreated (active) state; b) treated with 0.2% BPL for 2 hr. at 37° C and c) treated with 0.3% formalin at 37° C for 48 hr. Five ml. of material from each group was injected intramuscularly into rabbits twice weekly for 4 wk. The rabbits were bled before and on the 10th, 20th and 30th days of immunization. The neutralization index for each group was as follows: a) untreated antigen—5×10^7 on the 10th day; b) BPL inactivated antigen—2.5×10^6 on the 10th day rising to 5×10^7 on the 20th day and c) formalin inactivated antigen—no neutralization demonstrated under the same conditions. Complete virus inactivation can be obtained with BPL in 15 min. in 90% plasma at 37° C. In addition, the BPL treated material does not produce the protein denaturation and flocculation often found in formalin treated material. BPL inactivated viruses are fixed and not reversible upon storage, dilution or addition of reducing agents. The same degree of virus inactivation is obtained within the pH range of 5-9, permitting a choice of optimum pH. Although BPL hydrolyzes rapidly, the degradation products posses no virucidal activity. This study is being continued with other viruses.

ENDOCRINE ASPECTS OF INTERSEXUALITY. Jean Paul Pratt. Am. J. Obst. & Gynec. 68:341, 1954.

Intersexuality is a fascinating problem which has stimulated extensive medical writing. The definition of intersexuality should be simple, but indiscriminate use of the term and its synonyms has brought confusion. Since each human individual possesses male and female features in varying proportions, intersexuality is a normal condition and every human being is an intersex. In most instances it is not difficult to recognize the dominat male or female characteristics and without hesitation to classify each individual as male or female. It is possible, however, to find examples of all gradations of sex from a typical male to a typical female. The recent report of Moore and associates adds an interesting new approach. They found that the nature of the chromosomes in an individual may be detected by examining the epidermal nuclei in a small biopsy of skin. The sex chromosomes tend to remain compact while the autosomes are so diffuse that it is difficult to identify them individually. In 50 females the sex chromatin was identified in about two-thirds of the cells. It appeared as a plano-convex body lying against the nuclear membrane. In 50 male specimens they found an average of 5 per cent of the cells showing a small chromatin mass at the nuclear membrane. Exploration of the etiology of the intersexes has not yielded a value for the endocrines at all comparable with their use in treatment. The great variety of forms in which intersexuality may appear in man makes it impossible to give a definite scheme for rational therapy. It will be necessary to judge each case on its individual features. These unfortunate beings are sick people and they deserve sympathy and understanding. They are to be treated with all the resources of the art and science of medicine.

TOXICITY OF B-PROPIOLACTONE DEGRADATION PRODUCTS IN THE DOG AND MAN. A. R. Kelly, C. E. Rupe, James J. Tazuma and F. W. Hartman. Fed. Proc. 13:434, 1954.

The virucidal effectiveness and low toxicity of B-propiolactone (1) in plasma were reported previously (1951-53) by this laboratory. Because of possible potentialities as a sterilizing agent for plasma or biologicals, the toxicity evaluation of (1) and its degradation products has been extended to include 5 animal species. This report deals primarily with results obtained in dog and man. Dogs received 20 daily i.v. infusions of homologous plasma treated with 6 gm/1 (2-3 x the effective virucidal concentration) of (1). Daily dosages were equivalent to 500 cc transfusions of plasma in man. EKG, hemogram, body-weight, liver and kidney function and tissue histology were not adversely affected. Three-month-old puppies received daily (for 3 months) the human equivalent of 250 cc of plasma treated with 3.5 gm/1 of (1). No toxic effects were noted and growth curves remained unaffected, as compared with litter mate controls receiving untreated plasma. Plasma treated with (1) has been used clinically at Henry Ford Hospital for 2½ years; 82 patients received 185 transfusions of plasma treated at concentrations of 1-2 gm/1 of (1), 12 patients received 27 transfusions at 2.5 gm/1, and 133 infusions treated at 3.5 gm/1 were administered to 67 patients. Patient age ranged from 1 day-80 years. No clinical or laboratory evidence of toxicity was

observed, and the incidence of resulting hepatitis was zero. Comparative species toxicity of the purified degradation products of (1) in plasma will be discussed as well as EKG, hematopoietic and blood electrolyte effects, pathology produced, and excretion rate following massive dosages of these compounds in dogs.

RECURRENCE OF MITRAL STENOSIS FOLLOWING COMMISSUROTOMY. JOHN W. KEYES and CONRAD R. LAM. J. A. M. A. 155:247, 1954.

A patient with severe mitral stenosis received benefit from a commissurotomy that was maintained for a period of 18 months after which there was recurrence of all of the symptoms, indicating refusion of the valve leaflets. A gratifying result was obtained by repeating the operation on the mitral valve. Although recurrence of mitral stenosis after a technically adequate operation on the valve is extremely rare, when it does occur the possibilities of a second operation or even a third should not be overlooked. The successful principle in the surgical treatment of mitral stenosis has been proved to be that suggested by a London internist, Sir Lauder Brunton, in 1902. He thought the natural opening should be elongated. During the past four years, the practicability of accomplishing this by instrumental or digital commissurotomy has been well demonstrated. Naturally, there has been some speculation with regard to the possibility of healing of the divided commissures with consequent recurrence of the stenosis. Fortunately, although the number of mitral valve operations now numbers many thousands, true recurrence appears to be very rare. The unsatisfactory results that have followed in some instances have been due to other factors.

FIBRINOLYSIS IN LABOR AND DELIVERY. R. R. MARGULIS, J. H. LUZADRE and C. PAUL HODGKINSON. Obst. & Gynec. 3:487, 1954.

The purpose of this study was to evaluate the effects of labor and delivery on some of the various factors of the blood coagulation mechanism, including fibrinogen, fibrinolysin, prothrombin time, clotting time, and bleeding time. Blood of 20 uncomplicated obstetric patients was studied in serial fashion for fibrinogen, prothrombin times, clotting times and fibrinolysis as related to labor and delivery. Prepartum blood specimens were compared with specimens obtained at frequent intervals following delivery. Fibrinogen blood levels fell within the accepted normal range and were not significantly altered by delivery. Prothrombin times, bleeding times, and clotting time remained within normal limits. Of the 20 patients tested for fibrinolysis, 17 showed no lysis prepartum. Following delivery, lysis was present in the blood of 14 patients within 24 hours. By the fourth and fifth day postpartum, fibrinolysis was still present in 13 patients. Epinephrine, fear, muscular activity, preoperative medication, surgical stress, blood loss, and shock have been associated with increased fibrinolysis. In no instance was fibrinolysis sufficiently increased to interfere with blood coagulation or prothrombin acitivity.

*PREPARATION AND PROPERTIES OF HIGHLY PURIFIED ALKALINE PHOSPHATASE. JAMES C. MATHIES Fed. Proc. 13:260, 1954.

Combination of previous purification steps (Abstracts 123rd Meeting Am. Chem. Soc. pp. 24c, 1953) with Sevag's procedure has led to enzyme preparations

*From Edsel B. Ford Institute for Medical Research.

from swine kidneys with specific activities of 10,500 phosphatase units (mg phenol liberated from disodium phenyl phosphate in 15 min. at 25°) per mg of protein nitrogen (PU/mg PN). Material with a specific activity of 9,500 PU/mg PN was analyzed with the electrophoresis apparatus and the ultracentrifuge and appeared to be approximately 80-90% of one component. Qualitative spectroscopic analysis of this preparation demonstrated the presence of Zn, Mg, Cu and Fe (in approximate order of decreasing concentration) as major components. Minor amounts of Mn, Pb and P were also present. Of these elements, the Zn and Cu appear of primary interest. Copper has been found to be an efficient inhibitor of the spontaneous reactivation of alkaline phosphatase. Presumably it is present in this preparation as an inactive enzyme-copper complex. It is most likely that the copper is a contaminant which has accumulated during purification. The role of zinc, remains to be defined. Further study of the amino acid activation of alkaline phosphatase has shown that this property is not restricted to amino acids. Many compounds with the property of forming complexes with metal ions give the same effect as amino acids. It is probable that the principal effect of these agents is the reversal and/or prevention of trace metal inactivation.

NASAL INSTILLATION AND INHALATION OF CRYSTALLINE VITAMIN B_{12} IN PERNICIOUS ANEMIA. Raymond W. Monto and John W. Rebuck. Arch. Int. Med. 93:219, 1954.

Inhalation and nasal instillation of crystalline vitamin B_{12} in isotonic sodium chloride solution and lactose powder has resulted in adequate clinical and hematological response in 12 patients with pernicious anemia in relapse. The condition of 20 patients with pernicious anemia in remission has been maintained for periods up to 18 months. Detectable amounts of vitamin-B_{12}-like growth substance in the urine were found after pulmonary administration and nasal instillation of this substance. This simple form of therapy is not only effective, but safe and economical.

*A NOTE ON A CHEMOGRAPHIC ARTIFACT IN AUTORADIOGRAPHY. L. E. Preuss and C. Harrison. Science 120: 67, 1954.

Boyd and Board have defined the histochemograph as a gross image or gross image or grain grouping produced by chemical action when a specimen is in contact with the emulsion. Fitzgerald et al. apply the term *pseudophotographic* to agents, other than radiation, that will reduce the photographic emulsion. Such artifacts have been found superimposed upon autoradiographs of Cr^{51} and Au^{198} plaques. These chemographs corresponded to the debris dusted on the emulsion from a conventional lead pencil that was used to mark the emulsion near the autoradiograph. In view of these findings, markings of autoradiographs with pencil should be discouraged, particularly where the gross apposition technique is employed and especially where the specimen is likely to incorporate fine particulate radioactive material, autographs of which may be confused with the pencil chemograph.

*From Edsel B. Ford Institute for Medical Research.

IMMUNOHEMATOLOGY WITH THE ELECTRON MICROSCOPE. John W. Rebuck and Elton E. Hoff. Fed. Proc. 13:442, 1954.

When control human erythrocytes, mixed with their own plasma, were studied with the electron microscope, desiccation resulting from electron bombardment produced shrinkage of erythrocytes from the plasma. In contrast, when human erythrocytes were mixed with plasma containing their specific antibodies or panagglutinins, shrinkage interference was brought about at variable areas on the surface ultrastructure by adherence to the antibody containing plasma (Anat. Rec. 115:591-614, 1953). The smallest unit of reactivity measured 30mu in width. The size, height and frequency of such reactive sites varied with the antibody employed (Anti-A, Anti-Rh, panagglutinin). The reactive sites delineated by antibody adherence were plateau-like when viewed from the side, although umbilication or crater formation was at times apparent when concentrations of reactive units were separated by nonreactive sites. When human erythrocytes were studied after exposure to 1) high titered maternal antibodies which had proved to be lethal to the fetus, followed by exposure to 2) rabbit antihuman antibodies (positive Coombs test), reactive sites were similarly elicited although plasma adherence to the receptor areas was accentuated. Direct visualization of erythrocytes in erythroblastosis fetalis revealed structural changes similar to those produced experimentally *in vitro* by the addition of Anti-Rh grouping serum. Electron micrographs and tridimensional diagrams were presented depicting the structural changes described above.

TYPHUS FEVER (BRILL'S DISEASE) COMPLICATED BY DIABETES INSIPIDUS; Report of a Case. Clarence E. Rupe, Howard R. Marvel, Robert J. Ryan and Edward L. Quinn. J. A. M. A. 155:433, 1954.

Typhus fever (Brill's disease) has been reported only sporadically from areas other than the costal region of the northeastern United States. As suggested by Brill and Zinsser and established by Murray, cases of recrudescent epidemic typhus would be expected to occur in all localities to which persons from foci in the Old World have migrated. To our knowledge, this is the first case of typhus fever reported from the Middle West despite the presence in this region of a large population of eastern European origin. This patient also showed unusual features including a transient diabetes insipidus. The temporary diabetes-insipidus-like picture in this patient and electroencephalographic abnormality suggests hypothalamic or posterior pituitary involvement perhaps due to petechial hemorrhages in this area. The diuresis (11,900cc. in 24 hours) was much greater than that seen after febrile diseases.

MODIFICATIONS OF THE REDDY PROCEDURE FOR 17-HYDROXY-CORTICOIDS IN URINE. R. W. Smith, R. C. Mellinger and A. A. Patti. J. Clin. Endocrinol. & Metab. 14:336, 1954.

The original Reddy procedure for total butanol-soluble 17-hydroxycorticoids in urine was found often to yield zero values in specimens from clinically normal persons and, occasionally, from hypercortical patients. This was due to the nonspecific chromogenic reactions of impure butanol with sulfuric acid, butanol with

phenylhydrazine-sulfuric acid reagent, and butanol extract of urine with sulfuric acid. These interfering colors were minimized by purifying reagent grade butanol with sodium bisulfite and re-distillation. The conditions of the Porter-Silber reaction were modified by lowering sulfuric acid strength and lengthening the incubation period. The addition of dried acid-activated kaolin to the urine prior to its extraction was found to remove urinary proteins which often produced emulsion during butanol extractions. Kaolin does not interfere with the recovery of the 17-hydroxycorticoids. When these changes are employed, generally higher values are found than by the original procedure. No inexplicable zero values have geen encountered and correlations with various clinical conditions have been good.

THE GENESIS AND IMPORTANCE OF THE ELECTROCARDIOGRAM IN COARCTATION OF THE AORTA. Robert F. Ziegler. Circulation 9:371, 1954.

The electrocardiogram in uncomplicated coarctation of the aorta in infants reflects the pattern of the fetal circulation and serves as a useful prognostic guide. When the fetal ductus inserts proximally to the region of coarctation and closes at birth, right ventricular enlargement is present at birth but is retrogressive. Furthermore, in this situation collateral circulation has begun to develop before birth so that the left ventricle can compensate on assumption of the postnatal circulation, and the prognosis is good. When the insertion of the fetal ductus is distal to the coarctation, progressive, and frequently fatal, left ventricular enlargement and failure develop shortly after birth. Modifications of these electrocardiographic patterns in the production of right bundle branch block are also discussed and illustrated. Correlated data have been assembled in 57 patients with coarctation of the aorta, ranging in age from 10 days to 36 years. On the basis of this material the observations have been made.

SOME ASPECTS OF ELECTROCARDIOGRAPHY IN INFANTS AND CHILDREN WITH CONGENITAL HEART DISEASE. Robert F. Ziegler. Dis. Chest 25:490, 1954.

Some of the characteristic electrocardiographic patterns in normal infants and in infants and children with operable forms of congenital heart disease are briefly reviewed. One of the precordial lead patterns of right ventricular hypertrophy during early childhood is similar to that of normal infants during the first day of life. This is the pattern of upright T waves in leads from the right and flattened T waves in leads from the left side of the precordium. The prognostic significance of right ventricular hypertrophy in infants with uncomplicated coarctation of the aorta is reviewed. The diagnostic value of the electrocardiogram in patent ductus arteriosus is briefly summarized. A characteristic precordial lead pattern is described in typical cases of tricuspid atresia. This consists of broad P. waves, short PR interval or segment, broad QRS, absence of Q waves and late activation in leads from the left side of the precordium.